



*An Electronic – Age Dilemma
Aspects & Effects*

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English 102 - Sec. E1
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April 15 , 1999

Y2K

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*By the passing of the day, the Y2K is gaining
more momentum to make this paper
just a history*

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Preface

An Author's Note

This is not a conclusive research – paper since it deals with a current issue, a controversial problem and, above all, a topic with an unlimited scope and dimensions in terms of its technical aspects and socio-economic impact. Moreover, being far away from an open-shut case, at least not in the foreseeable future, it is being covered by a massive, but mostly fragmented, news coverage and a colliding information, in nature and substance, that blurs the eyes and never draws a line between facts and fiction. To be sure, the **Y2K** issue is like weather-forecasting. The only difference is that the latter's prediction is probably more accurate than that of the **Y2K** impact. Naturally, this is due to the availability of more information and longer experience.

Using the opportunity of this class **English 102**, and being a student of engineering, this paper, at its best, is to be considered an attempt to continue my trilogy in the field of **Electronic Technology**. My first paper, titled: **New Advancements in Telecommunications Technology**, was presented in my senior year in **High School** to the **National Science Competition** (Kuwait-1997). Luckily, it was awarded the **First Prize**. Recently, the Rowland Research Institute of Cambridge, Mass., has successfully broken the **constant** speed of light experimentally. And this might turn-over the whole theories of physics, and thus of electronic technology. Therefore, my next paper will hopefully be on the **Semi-Conductors Engineering & Technology**. It is intended, with some luck, for my junior year in the **College of Engineering at Boston University**.

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Background

Since the **Dawn of Creation**, exploration of the unknown, the discovery of new ways and the implementation of new means of utilization was **Mankind's** main obsession to improve his well being and to escape his primitive wilderness. Undoubtedly, in his quest, he overlooked the fact that *each invention was a separate invention, or rather the opening of a new series of inventions, for each was susceptible of improvements which would be introduced one by one.*⁽¹⁾ And certainly each has its inherited problems and resulting impacts.

Discovering that the road to **Knowledge** was not well paved and could be very risky, he had to apply the only way under his disposal: The primitive way of trial and error. In order to achieve for the better, he had to learn from his mistakes, improve on his previous experiences, develop a criterion upon criterion and a measure following a measure. But to be sure, some steps were within the framework of the **rationale** and most were clumsy at best. That is why we tend to discover our mistakes some how late. And that is how, among an endless list of items, we drilled a hole in the unreachable ozone-layer in the very high sky.

Therefore, in his quest, **man** followed many patterns through many manners. From the discovery of **fire** and the invention of the **wheel** to the formulation of the alphabets and the founding of **numbers**, all the way up to the **Age of Enlightenment** passing the **Industrial Revolution** to the not so old **Scientific Revolution**. Thus, when **man** reached the **Electronic-Age**, it is not astonishing that in his uncertainty, he found himself entangled in the web of his own achievement. It seems to be that, to **man**, this is the only pattern to uncover the new frontiers.

Otherwise, how can we explain the ignorance of the learned man so as to neglect the rationality of the scientific systems by his expediency and thus to involve himself with this **Y2K** syndrome. How did it escape him that numbers represent reasoning and logic and not a mere symbols or codes. It should be an axiomatic to him, after the long history of **Mankind**, that *even very primitive people have a number system; they may not count much beyond four, but they know that two plus two equal only four.*⁽²⁾ It is so basic. Is that where the roots of the Y2K problem lies?

⁽¹⁾ Sarton, George. A History of Science. P.4

⁽²⁾ Bronowski, J. The Ascent Of Man. P. 155



***An Electronic - Age Dilemma
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Introduction

The Y2K, is not more than a programming error in the computer. It happened because of the human urgency in reaching things and his accelerated speed to accelerate the pace of life. For that, we abbreviated the customary four digits of the year to only the last two digits. It could be a way to profit more or to lessen one-self's effort in doing more. Whatever the reason may have been, it was for the programmer, Perryman points out, *an ingenious way, to provide exactly what was needed at the time: Conservation of scarce computer memory.* This turnication of digits from four to two confuses the computer and makes it unable to distinguish between the year 2000 and 1900 – since both years end with the same two digits: 00. The result will be a malfunction or a computer shut-down (commonly known as a crash or more elegantly a **meltdown**). Thus, to command and / or to recall the date Jan. 1, 2000, the computer will indicate the same date but of the year 1900. This is an oversimplification of the matter, naturally. However in its abstractive form it is not more than a small technical error, its impact is tremendous and could very well be catastrophic. That is because of our almost complete reliance on computers and other electronic devices for every segment of our life in this electronic-age.

Why is it that a minor technical mishap, with honest to God good intentions, is spreading like a spark in a hay-stack or like an epidemic virus escaping from its bottle?. Why is man, in his pursuit of achievement, and backed with a very rich knowledge that has accumulated through many millennia past, become so careless and antagonist to his own purpose by his invention of a reckless bug that could have a proportional consequences. Where in the name of science and technology are we led and to what aim and objective? Is this the best way to start the very new era of Information Technology, which is already depleting our resources and exhausting our expertise. Could the reason be that *the dichotomy in science (the idea and the practice) , the fact that its progress requires both conceptual imagination and manipulative ingenuity, is particularly apparent in the scientific revolution, and present peculiar problems.*⁽³⁾ And that could very well be the source of the Y2K problem. However, our intentions in this paper is limited only to the aspects and effects of the Y2K and not its organic or historical sources.

⁽³⁾ Hall, A.R. The Scientific Revolution. P. x v.

The Y2K

Enumerating .. Locating the Bug: We are forcefully riding the electronic age and depending so much on its technology whenever possible. Therefore, the Y2K is embedded in every computer that we encounter and handle every day. The good news is that there are some new computers that are Y2K compliant: Meaning that it will not confuse the year 2000 with that of 1900. But how to locate and differentiate between the two is anybody's guess. We need a good tabulated records and the rest is for the experts. This is why the Y2K is labeled or nicknamed the millennium-bug, it could be anywhere in any place. This mean not only the electronic calendar but all information, computation and reservation systems. It includes personal, corporate, insurance, investment houses, industries, health, education and legal records. But most important, it includes services like electricity, water, energy, transportation, communications as well as airports, planes, broadcasts and the military. Last but not least, it is embedded in our personal computers, faxes, house-hold appliances, cars and many hidden items. In short, the Y2K reaches all aspects of life, personal and otherwise, without any escapement.

Effects & Aspects: A Panorama:

To be exact, the Y2K impact could be well comprehended through some illustrations. It is probably the only way to deal with such a problem in regard to its effects and aspects. Let us acknowledge that all electrical power plants and grids, water utilities, communication services and its exchanges are non-compliant to the Y2K factor. Then, as a result, it follows at the turn of the century, that black-outs, non-running water facilities and dead phones are inevitable. However temporary that could be, the consequences would certainly be civil unrest, anarchy and misery at its worst. Let us further elaborate some more in the same path and pattern. Try to contact your bank for an up-to-date statement only to be told you are already in the red, despite the oversized check you have just deposited a few days ago. A slight error made the bank quote you the Mar. 1900 balance. Your life turned upside down and your business is entirely disrupted. If you check on an already confirmed flight reservation, you are told that no such flight has ever been operated. In fact, you are told to understand that there has never been any planes going to that destination. Wake up - we are just in the year 1900 and not the 2000 yet.

Your neighbour's farm is not in any better shape. Because of all these *computerized gadgets in his machineries, he should change to manual until things straighten out*, explains The News. But how to go about recruiting farm laborers without any means of communication. He calls on you for help, but you are already in a mess. Why? Your wife just came in breathless because of her running all the way home. She was supposed to pick up the children from school and to get some groceries from F-Mart. Yesterday, after waiting in line for two hours, she was told that the store is out of food supplies. Maybe today she will get some..but not much, since there is no refrigeration in the house. But as usual, her car was running on empty, and your's was her best alternative. What about the corner gas station ? Don't you know that refineries are shut-down? She is also in a hurry and the streets are so jammed because the traffic lights are going astray. Certainly the national guards that was called in is doing its best, but under the circumstances the situation is more complicated.

But you have not, as yet, received the biggest surprise of all. A knock at the door (no door-bell), a telegram delivered by hand (not fax, not telex, not E-mail). It is from your son. He was coming home from school to spend the new-year's holiday with the family, but ended-up in Nova Scotia, Canada, instead of Boston, Mass. It was the insistence of the plane's auto-pilot and the control systems, ground and air, that brought about this mishap.

You realize, by reading your newspaper, that your problem and that of the community is dwarfed by what you have learned. Stock markets, Financial houses, investment corps. State-Land Insurance and Reality Mutual Fund (this one you are a share-holder), are in a state of confusion with breathless efforts just to know where to start. The only amusing thing about this is what you are hearing constantly: That there is nothing really to worry about. Even when you learn that the U.S. President himself is trying to find a primitive radio machine to call the scattered nuclear-basis in order to double check. He wants to be sure that no missile could go astray and land on the roof of Buckingham Palace, London, U.K. But what about a lost nuclear-head from a foreign land, to which the Y2K bug is just some news-item to them, penetrating the U.S. airspace. Still nothing to worry about! What about our investments in other countries and all the incoming-outgoing business transactions..etc.!!

The melodrama: The alarmist & the hysteric:

To view the picture more clearly, let us lay some facts. As Ortiz observed, Sherrie Kay, the executive director of the Hunger Task Force of Milwaukee, thinks that *it is just really important for people to be aware that the Y2K is a real issue because it could affect their life, and how they run their household and business.* This is in regard to the opening of a Y2K Food Expo (the largest in the Mid-west), which advocates in taking the threat more seriously and be ready. But where does this leave the Agriculture Secretary in his emphasis, according to Register, *that the basic foods American expects to be in their grocery stores will be there, regardless of the Y2K impact.*

In-here, it seems that both have missed the real point, which is the fluctuation of the extremes. On the one hand, the Food Expo is not any more than a part of the wide spread publicity and advertisement, some of the food industries are advocating for some material profit, to sell non-perishable food items. Their real concern is not more than *to cash in on the Y2K*, as Ortiz emphasized, But what about the rapid price escalation because of the rising in demand. Further-more, as Perryman questions, *is it not true that if the Y2K turns out to be a dud, then whatever level of stockpiling does take place will result in lower consumption as inventories are drawn down early in the new year? Are the food industries going to shut down and lay off workers awaiting the food stock-piled in the homes to be depleted?*

On the other hand, the Secretary of Agriculture has based his facts on the number of compliancy, or what is labeled as "mission critical systems". But what *if some systems being removed from the mission critical category might indeed be vital to the Department of Agriculture's operations and might impair its ability to serve the nation*, Register argues in order to put the facts where it should be.

Infact, it is the lack of the adequate information, the hidden technical variables, the fear of being an alarmist and the press manipulation of the subject matter that are playing a great role in enhancing the arising hysteria within certain segments of the public. To be sure, the press alone, in its usual way of seeking suspense and news-breaking events, takes much of the blame in creating this panic, even among the educated and the responsible. On his web site, Peter de Jager, one of the first to predict the Y2K bug in 1991, points out that *if your only source of Y2K information were the press, you might well believe all government and industrial sectors are in danger of total collapse in Jan.1, 2000*, according to I.T. News Edition To be sure, several new publications, claiming concern for the Y2K issue, started to flourish recently. Substance: Ads. and more ads. to sell Y2K's contingencies commodities. Aim: The easy dollar.

Optimism & Assurances:

The so-called millennium-bug problem can be easily described, but the solutions for avoiding computer breakdowns are more complex. It is fixable if technicians and programmers find the problems in time. In this regard, organizations are spending hundreds of millions of dollars to check the codes and chips that run the electronic systems. For instance, according to Kerber, *A Globe survey of large institution around New England, suggests that many have made progress tackling the (Y2K) problem.* To be sure, banks like Fleet Financial Group and State Street Corp. have already reserved blocks of downtown Boston hotel rooms to keep technicians nearby in case of unanticipated problems arising on new-year's eve. AT & T has already prepared systems considered "mission-critical" that will keep its long distance services available no matter what. The same is with Gillet Co., which has already finished 90% of the basic work regarding the Y2K bug. Eventhough some firms, especially small or medium-sized, are lagging in their work, Kerber noted that *public officials appear comfortable with the preparations of critical service providers.* In fact, A Massachusetts' Information Technology officer declared that he would be *more worried about things that can't be controlled like a storm or a localized power outage on Jan. 1, 2000 than about the Y2K bug,* emphasized Kerber.

A leading guru on the matter, De Jager, a mathematician and computer scientist, is planning to fly around the world on Jan.1,2000. According to the Financial Times, *he is not worried that a computer-crash will cause the plane in which he is flying to crash.* Founder of **The Year 2000 Information Center**, he believes that a tremendous progress has been made in regard to the Y2K problem. For the public calm, according to I.T. News Edition, he stresses that *it is about time for companies to say honestly what they have achieved, what they have actually fixed and what remains to be done. Unless those achievement start becoming widely known, people will assume nothing has been done and there will be justifiable panic.* He also believe that good news needs to be told about the world's Y2K efforts. To him, it should not worry us that some scattered problems in business or services here or there will bring-down our civilization. To be sure, one of the actions that has already been implemented is a database that, as showed by Government Computer News Network *identifies biomedical equipment unaffected by the date change and equipment with potential problems.* Moreover, as far as power supply is concerned, Yodice asserted that

we should not worry much, since the most affected plants would be the nuclear ones, and those plants supply only 28% of the country's electricity. But, in publicizing the efforts toward the Y2K problem, we are encountering some hesitant companies and agencies for fear that revealing such information might harm them in the future by legal lawsuits should their assessments prove to be inaccurate.

However the Congress' deadline for Y2K solution of March 1999 could not be achieved in time, the Clinton's Administration identifies the year 2000 problem as the **No. 1** issue. Of the \$ 1.7 trillion spending package being sent to Congress, \$30 billion is to be allocated for the **Information Technology** programs, of which the Y2K problem is a major part. Therefore, Dorobek concludes, *dealing with the year 2000 problem, tops the list of priority initiatives* in the federal fiscal 2000 proposal.

The Awesome Technical Part:

Since overcoming the Y2K problem is not more than a correction of the small computer chip and/or doing some reprogramming, then the matter is not that difficult. However, there are some conditions attached. First, Yodice observes, *there are any where between 50 million and five billion embedded systems that may need new chips installed.* Second, it is important to differentiate between the ones that are Y2K noncompliant and the other ones. Third, a system has to be adopted by which computers are categorized according to vitality and importance and thus priority. This is to be carried out taking in consideration that speed and time are very important factors.

In addition, there is the task of carefully analyzing the nature of the process. *You cannot just read the code, you have to follow the logic of the program. You could read every line of code every day and still won't find what might go wrong. You have to look at the whole of the program,* stated David Chang, an engineer and specialist in Primeon Inc. in Burlington, Mass., according to The Boston Globe. Obviously, in the electronic systems, there is always the possibility of different features or norms in the method of programming. For example, it is not astonishing to find variety of shortcuts or writing the year first followed by the month and the day. When looking at the codes, any professional can easily find most of the problems. But it is the last 5% that are the code problems which is very idiosyncratic.

Still another problem is the system's over-riding factor. It is not how correct the computers when working separately, it is how they work correctly when connected in pairs, triples or in concert with other electronic devices in a web-like network. It is here that things can go wrong, be overlooked or impossible to detect. In short, it is not how to look for a **single** needle in the hay; this could be worked out easily, since once the needle is found, the task is over. It is how many needle / needles there are in the hay. This is the time consuming and painstaking task. It is not only how to look and where to look, but what it is and how many items are being looked for.

That is why some experts argue that :

- ❶ The technical achievements should never be measured in quantities or percentages. There are always some vital but hidden and overlooked noncompliant units in the system that, in their technical manner, play a central role to ones that are Y2K compliant.
- ❷ Some units are reliable when working separate or independent of each other, but fail their performance once they are interconnected to the system. And that, according to The Boston Globe, what exactly happened at Boston Airport. The elevators and fire-alarms worked fine when independent of each other. *But tie the two together then the system doesn't work*, noted The Globe.

This brings us to non-other than the hard and lengthy trial and error method of testing and verification.

Further-more, it is also important to consider whether the Y2K problem is due to the software. If it is, then it is necessary to find what rules these software-programms uses. The Providence Journal proposed that *one of the areas that needs to be addressed are spreadsheet and database programs that use dates. Many of these programs allow only two digits for the year*, The Journal noted. Another problem-area is the program version. For example, The Journal added, *to enter the year as just 20 in one version it will be interpreted as 1920. But in another version it would be interpreted as 2020. In a third version*, The Journal continued, *the year 2020 can't even be entered. Still in a different version, it will not accept dates starting with 2000 and beyond*, The Journal concluded.

Some Numbers & Figures:

On his **The Year 2000 Information Center** web site, as emphasized by the I.T. News Edition De Jager is assuring us that *tens of thousands of companies and agencies have spent billions of dollars making sure their systems won't fail at the turn of the century*. Certainly, it is next to impossible to have a break-down for these figures or itemize them. But we will try to present some examples of what is going on the U.S. scene.

The States' share could be exemplified by the following outlay. In Florida, for instance, the estimates, Cox observes, *are between \$ 75-90 million to fix the problem on the state level. With Florida's local governments addressing their own problems Cox adds, the costs could roll into the billions*. Similarly, in Massachusetts, according to Kerber, *the Highway Dept. is expected to spend as much as \$15 millions to fix the controls of the 10,000 or so traffic lights*. But it seems to be that the private sector outlays dwarf this figure. For example, Bell Atlantic will spend as much as \$550 million and Raytheon Co. is spending about \$180 million. Is it justifiable? Well, to Cox, it is *when compared to the cost of \$ 2.5 billion in lost wages due to a two-week strike against United Parcel Service in the summer of 1997*. And that was only a brief disruption.

On the federal level, *of the estimated \$30 billion for fiscal 2000 on Information Technology programs, a large amount (around 25% but could not be specified as yet) would be spent on the Y2K related problems*, according to Dorobek. Is there any improvement in this concern? Well, in his comparison, Register points out *that as of May 14 last year, the Department of Agriculture has fixed and tested 40% of its mission critical systems. By January 1999, the number of systems fixed was 71%*. Further-more, it is estimated, according to CNN's special program **Y2K: Countdown To The Millenium Bug** that *the U.S. government Y2K tab to be \$6.4 billion, with the highest budget being the Defence Dept.: \$2.5 billion and the lowest one being the National Science Foundation: \$1.4 million*.

The above stated figures illustrate, through very limited examples, the general scope of the Y2K's reflection on the national scene. Accordingly, it is not anticipated that this trend is to be any different, when looking at the whole details, except in the size of the expenditures or in the sum of the parts of the efforts to be taken in this regard. However, the real full picture of numbers and figures is not that clear as yet due to various reasons and factors. For example:

- ❶ It is too early to calculate such figures, since it is concerning a current issue.
- ❷ Because we are dealing with an unprecedented problem, no body really knows the extent of the matter as yet.
- ❸ What is available of figures so far, or that of future estimates, is not being transmitted to the public by private companies or public agencies, for fear of legal litigation in the future (liability suits for example due to Y2K effects), should their assessment turned to be inaccurate.

The Legal File :

It is not surprising that the begening of the millenium will witness an enormous lawsuit because of the Y2K bug. In fact, some frivolous suits have been filed already. They are directed toward errors or incompetency in the computer systems or programs that cause mistakes in business transactions or inconvenience in services to consumers. Therefore, a bill is being introduced to Congress that would limit the amount of damages that can be collected from companies that cause business failures or sell products that fail due to the Y2K problem.

While some may have a justifiable case in their lawsuit, others, undoubtedly, are exploiting the matter to its greatest end. *These lawsuits are sheer craziness and represent chasing at its worst. They are absolute confirmation that Y2K litigation is not about consumers, but about making wealtery lawyers wealthier,*” Said Sen. John McCain, the one who introduced the bill, to CNN’s TV’s presentation **For Some, Y2K Is Already Causing Problems**. But the other side of the coin says that *changing the law which controls the actions of corporate leaders within our civil justice system in order to reward the irresponsible while denying recovery to the responsible sends the wrong message to the business community, to the public and to the voters*, stated a Houston attorney, according to CNN. Certainly, the controversy is yet to be settled.

The lawsuits that have been brought to court or expected to go to court because of the millennium-bug ranges from the tiny to the grandest. It covers all aspects of life, as the Y2K does. Such ones could be : Rejection of credit cards, traffic snarls, disruption of air travel, power outages, production shut-down, systems failure, medical / health mishap, records foul-up and the like. In short,

there is no way of enumerating the type of cases or, for that matter, calculating the huge amounts of liabilities to be claimed. It is enough to know, as CNN emphasized, in its special program **Y2K: Countdown To The Millennium Bug**, according to **The Electric Utilities & The Year 2000 Agency**, *that for every electric company trying to solve its Y2K problem, there are two just beginning their Y2K program*. Therefore, just imagine what kind of claims are to be filed in regard to power-outage only. The only way to do that is to wait and see. With some luck, this might take another millennium considering how uptight the legal system and crowded the courts are currently. In fact, it is presently estimated (during a recent Congressional hearings on this matter) that the amount of liabilities will exceed the estimated (\$ I trillion) cost of solving the Y2K by three times.

Y2K Global :

In this paper, our concern is about the Y2K problem in specific and its aspects in the U.S. in general. But the Y2K is as much **Universal** as the **Electronic Age** we are living in. Furthermore, due to this Age, the world is becoming not more than a small **Global Village**. And above all, our reliance on the microchips and other electronic devices is making the social, scientific, economic and political relationships between the different nations more interrelated and inter-connected. Therefore, a brief outlay of the Y2K aspects in other countries is in order here. Our emphasis will mainly be on some of the efforts toward solving the problem, the initiatives taken by others and the encountered risks in this regard.

Experts at the World Bank have warned, according to CNN TV's presentation **World Bank: Few Developing Nations Geared for Y2K Bug**, *that the turn of the century could bring havoc worldwide on public and private sectors*. In fact, the Bank's analysis shows that only 15% of the 139 developing countries have taken concrete steps to correct the Y2K problem. To be sure, the developing nations are more vulnerable to this problem because of their reliance on an old or not up-to-date systems; and this is compounded by their scarce resources and expertise, in addition to their much needed attention in other vital fields. That is why only 54 developing nations had some kind of Y2K policies, of which only 21 are taking concrete measures to safeguard their system. But to make matters worse, *even for those time and money is running out so fast*, the Bank asserts.

The World Bank is lending millions of dollars to assist the affected countries to replace or re-program their systems. In its survey of the matter, the Bank found that only 34 out of 139 nations reported medium to high awareness of the Y2K problem, but without them taking any action as yet. Priority-wise, as it is reported by a Bank coordinator, the financial sectors of developing countries are the most ready to handle the Y2K problem, followed by telecommunications systems and power supplies.

Thus, it would not be astonishing to find that *the proclaimed year 2000 as the Year for the Culture and Peace by the U.N., would be shattered by computer failures*, noted Kirsner. He added *that this is not only for the U.N. itself, but for each of the 185 countries the U.N represents*. That is why the U.N. has adopted a resolution that recognizes the potentially serious impact of the year 2000 problem. The resolution, Kirsner maintains, *warns that the millennium bug could affect power supplies, telecommunications, financial systems, public health, food supplies, emergency services, utilities and the organization of social welfare*. Needless to say, the Y2K impact is not limited to the member states of the U.N. but on the numerous and various world-wide agencies and organizations within the U.N. itself. In addition, there is also the impact on *the international data-base system, which covers, more than 2800 data-base world-wide*, according to Aument.

To summarize, according to the **Gartner Group Consultants** of Washington, D.C., the world vs. the Y2K problems appear, as presented by CNN's special program **Y2K: Countdown To The Millennium Bug**, as follows:

Global spending: \$ 1,000,000,000,000.00

High Risk Countries regarding Y2K: Russia, China, Thailand, Argentina.

Medium Risk Countries regarding Y2K: India, Germany, Mexico, Brazil.

Low Risk Countries regarding Y2K: U.S.A., U.K., Holland, Belgium.

(Risk indicates the effect of Y2K on the country or the vulnerability of the country to the Y2K impact because of the lack of initiatives, efforts, awareness or resources).

A Red Cross International warning regarding Y2K, instructed:

[Keep flash-light, canned food, water, and cash.]

Conclusion

The Y2K or the turn of the century problem, is developing to an unexpected crisis of great magnitude. A minor turnication, due to man's oversight, of the year's four digits to two digits will make computers misread the double zero digits and bring havoc to all electronic systems. To tackle this problem is next to the impossible due to the wide spread of the electronic devices in all walks of life.

This, of course, will have an unpredictable impact on the social, economic and legal aspects of all communities. Indeed, to Perryman, *any review of Y2K related studies confirms the difficulty in accurately forecasting the extent of the problem on Jan. 1, 2000*. In fact, he believes that it's unlikely that any person or organization really knows what will happen to our computers at the end of this year. Much efforts and resources by the private and public sectors are being allocated to over-come this unanticipated problem. Moreover, much hysteria and panic are overcoming the public as well. Everybody is concerned in how to race time so that the turn of the century will not trigger a crisis that is so much inherited from man's past.

Undoubtedly, the accelerated technological revolution has contributed much to make this problem a millennial dilemma. This new-born Electronic Age, a mere by-product of the Arms-race and the Space-explorations eras, has brought about more advanced devices than that of man's comprehension or utilization. The development of new sciences and the marrying of chemistry and physics in the form of the silicon-chip made every thing controllable by the mere pressing of a button. To be sure, this so-called chip is not only capable of firing nuclear missiles but also slicing and frying potato-chips as well. Nevertheless, the real question is how to deal with the crucial **paradox** of knowledge. *Year by year we devise more precise instruments with which to observe nature with more fineness. And when we look at the observations, we are discomfited to see that they are still fuzzy, and we feel that they are as uncertain as ever. We seem to be running after a goal which lurches away from us to infinity every time we come within sight of.*⁽⁴⁾ This might as well be the message of the Y2K. Our only choice is not more than to wait and see whether the turn of the century will bring a minor confusion or a major chaos. In short, as long as the clock is ticking hurriedly toward Jan. 1,2000, and even with the spending of more than one trillion dollars, and since every day is brining more controversies, our only conclusion regarding the Y2K is inconclusive in apprehension or expectation.

⁽⁴⁾ Bronowski, J. The Ascent Of Man. P. 356.

Appendices

- I. **Y2K**: What Could Go wrong
- II. Some **Y2K** Scenarios
- III. & Some **Y2K** Quips & Tips

Appendix I

Y2K : WHAT Could Go WRONG	%
Bad credit reports due to year 2000 errors	70
Loss of local electric power for more than one day	55
Litigation against corporate officers	55
Loss of international telephone services	35
Errors in 2000 tax reporting (1099 forms)	35
Errors in Social Security payments	35
Errors In first January paycheck	30
Errors/Delays in tax refunds	30
Delays / Cancel. of airline flights	25
Loss of local telephone services	20
Errors in motor vehicle records	20
Medical/hospital billing errors	20
Manufacturing shut-down for more than one day	20
Errors in bank accounts	15
Disruption of stock market trading	15
Shut-down of pharmaceutical manufacturing	15
Errors in hotel reservations	12
Errors in prescription dates	10
Delays in parcel deliveries	10
Water shortages/rationing	7
Corporate bankruptcy	5
Food shortages / rationing	3
Death or injuries	1

* Source : The Boston Globe Feb. 8, 1999.

Appendix II

Some Y2K Scenarios:

Contingency planning, for some people, is an important thing to survive the Y2K bug.

- Officials in Tallahassee are recommending emergency steps, similar to those for a hurricane threat, in case of a possible public services meltdown. It includes stocking up as much as three weeks of food supplies, batteries, blankets...etc. A state Emergency Operations Center is to be activated on Dec. 31, 1999.
[Sun-Sentinel, South Florida Jan. 21, 1999.]
- An Information-Fair was organized at Santa Fe to plan for the Cassandra Project to publicize and schedule workshops to tackle the Y2K bug. It includes:
 - * Organizing your Household, Neighborhood and Community.
 - * Preparing the Work Place: Understanding Y2K Impact on the Local Economy.
[ABQ Journal Jan. 30, 1999.]
- Blocks of Boston's downtown hotel rooms are being reserved to accommodate some bank technicians to be near-by for emergency situations. Possibility of calling out National Guard units for keeping order, similar to what several states are formally considering.
[The Boston Globe Jan. 31, 1999.]
- No vacation for Albuquerque Police Dept. To celebrate the turn of the century. Expecting black-out, dead-phones and civil unrest or chaos.
[ABQ Journal Feb. 4, 1999.]
- A fear-inspired Food Expo. is to open in Waukesha County Exposition Center. The first of its kind in the Midwest, it is designed to feature vendors selling food and food storage products. Some items: solar lightings, dehydrated casseroles non-perishable products, food pastries and time capsules. 150 press-releases were issued by the Hunger Task Force. As many as 15,000 expected to attend. \$5 admission fee.
[Busines & Your Money Technology Feb. 12, 1999.]

Appendix III

& Some Y2K Quips & Tips:

Even Doomsday has its bright side. Some selections:

- A string of chemicals have been rejected because, according to the computer, its expiration dates seemed to be in the year 1900.
[ZDNET Jan. 2, 1999.]
- A Minnesota woman who is over 100 years old, received an invitation to attend kindergarten. A very slight computer Y2K error.
- James Bennett, a finance professor at the Univ. of Mass., was asked by his neighbor to sell his pile of firewood. He offered to share it with her, if worse come to worse.
- In opening some traffic-light control cabinets., the Mass. Highway Dept found, along with several rat nests, 32 different control mechanisms from manufacturers that couldn't be located or no longer in business.
- Christopher Mogil, who runs a philanthropic group in Arlington, said he sees a silver lining in the Y2K bug: The threat will encourage neighbors to get to know each other. In normal times there is no need or no time for that.
[The Boston Globe Feb. 8,1999.]
- A Primeon Inc., Burlington, Mass., employee found, when reviewing an insurance company, that its computer programs recorded dates as groups of two digits representing "month, date, year". But the program could also read it in a different order: "year, date, month." A very costly and confusing billing system- it is called a "short-cut". Therefore, a shut-down is not only expected on Jan.1, 2000, but also on Jan. 1, 2001, because of this reversed programming pattern.

- Schools, including universities, will be relegated to the bottom of Y2K preparedness list. We don't send our kids to school during a snowstorm, flood or other natural disaster, and especially when the full fury of Y2K is upon us. Nevermind that the Y2K and its electronic system is the product of schools.
- School facilities are universally regarded as community shelters during natural calamities. They would make great shelters and food / medicine distribution centers. After all, most public schools have technical staff that are inadequately skilled to handle a serious Y2K remediation project. Education, it seems to be, is necessary for the long-term health of the nation but it is not required for survival during a crisis!

[Y2K Time Bomb Feb. 8,1999.]

Reading this paper could be just a waste of time if Y2K turned out to be a dud, or a drop in an ocean if Doomsday is being brought about.

Bibliography

1. Aumente, Jerome. New Electronic Pathways.
Beverly Hills: Sage Publications, Inc., 1987.
2. Bronowski, J. The Ascent Of Man.
New York: Little, Brown & Co., 1973.
3. Cox, David. "Y2K Could Hit Like Hurricane."
Sun-Sentinel-South Florida 21 January 1999.
Online. Internet. <http://www.sun-sentinel.com/news/helpindex.htm>.
8 February 1999.
4. Dorobek, J. "Clinton's Proposal Identifies 2000 Problem As Number 1 Issue."
Government Computer News Network 8 February 1999.
Online. Internet. [http://www.gcn.com/gcn/1999/February 8/ la. htm](http://www.gcn.com/gcn/1999/February%208/la.htm).
12 February 1999.
5. "For Some, Y2K Is Already Causing Problems."
Atlanta: CNN 10 February 1999.
Online. Internet. [http://www.cnn.com/TECH/compubug/9902/10/y2k.nugauon.ap/ index.num](http://www.cnn.com/TECH/compubug/9902/10/y2k.nugauon.ap/index.num).
6. "Good News For Y2K."
I.T. News Editions 10 February 1999.
Online. Internet. <http://ycar2000.dci.com/Articles/990210dejager.htm>.
12 February 1999.
7. Hall, A.R. The Scientific Revolution: 1500-1800.
Boston: Beacon Press, 1954.
8. Jones, Jeff. "Y2K Will Be No Vacation For APD."
ABQ Journal 4 February 1999.
Online. Internet. <http://www.abqjournal.com/news/2news02/04.htm>.
12 February 1999.
9. Kerber, Ross. "Racing The Clock."
The Boston Globe 31 January 1999.
Online. Internet. <http://www.boston.com/globe/business/packages/y2k>.
8 February 1999.
10. Kirsner, Scott. "U.N.'s Millennium Man Battles Y2K."
Atlanta: CNN 19 January 1999.
Online. Internet. <http://www.cnn.com/TECH/compubug/9901/19/millennan.y2k.bug/>
11. Lord, Jim. "How Will Y2K Affect Schools?"
Y2K Time Bomb 8 February 1999.
Online. Internet. <http://y2ktimebomb.com/Tip/Lord/lord9906.htm>.
12 February 1999.
12. "Millennium Bug Threats To Farms."
The News 10 February 1999.
Online. Internet.
[http://www.thenews.00.uk/cgi-bin/W3Vfile.cg/MO-4/TF-news17DB-NEWS & ST=NEWS](http://www.thenews.00.uk/cgi-bin/W3Vfile.cg/MO-4/TF-news17DB-NEWS&ST=NEWS).
12 February 1999.

13. **“Online Biomedical Data-Base Tracks Equipment For Date Code Readiness.”**
Government Computer News Network 8 February 1999.
 Online Internet. [http://www.gcn.com/gcn/1999/February 8 / 16a. htm.](http://www.gcn.com/gcn/1999/February%208/16a.htm)
 12 February 1999.
14. Ortiz, Vikki. **“Millennium – Bug Fears Inspire Food Expo.”**
Business & Your Money Technology 12 February 1999.
 Online. Internet. [http://www.isonline.com/bym/tech/0212 hungry. asp.](http://www.isonline.com/bym/tech/0212_hungry.asp)
 12 February 1999.
15. Perryman, M Ray. **“Profit Incentives Solve Problems.”**
The Economist 9 February 1999.
 Online. Internet. [http://www.amarillonet.com/stories/020999/bus.solve.shiml.](http://www.amarillonet.com/stories/020999/bus.solve.shiml)
 12 February 1999.
16. Register, Charlie. **“Y2K And Our Food Supply: Who’s Minding The Government Store?”**
Y2K Time Bomb 11 February 1999.
 Online. Internet. [http://y2ktimebomb.com/Industry/Agriculture/creg_9906a. htm.](http://y2ktimebomb.com/Industry/Agriculture/creg_9906a.htm)
 12 February 1999.
17. Rupley, Sebastian. **“Some Y2K Bugs Strike Early.”**
ZDNET 21 January 1999.
 Online. Internet. [http://www.zdnet.com/zdnn/stories/news/0.4586.2190613.00. htm.](http://www.zdnet.com/zdnn/stories/news/0.4586.2190613.00.htm)
 8 February 1999.
18. Sarton, George. **A History Of Science: Ancient Science Through The Golden Age of Greece.**
 New York: John Wiley & Sons, Inc., 1964.
19. **“What Could Go Wrong.”**
The Boston Globe 8 February 1999.
 Online. Internet. [http://www.boston.com/globe/business/packages/y2k/wrong.htm.](http://www.boston.com/globe/business/packages/y2k/wrong.htm)
 8 February 1999.
20. **“World Bank: Few Developing Nations Geared For Y2K Bug.”**
 Atlanta: CNN 27 Januay 1999.
 Online. Internet <http://www.cnn.com/TECH/compubug/9901/2/y2k.trmuworld/>
21. Yodice, James. **“Expert: Begin Thinking About Y2K.”**
ABQ Journal 30 January 1999.
 Online. Internet. <http://www.abqjournal.com/news/>
 8 February 1999.
22. **“Y2k Count Down To The Millennium Bug.”**
 Atlanta: CNN 1998.
 Online. Internet. <http://cnn.com/SPECIALS/1999/21/>
23. **“Y2K Hits Home.”**
The Providence Journal 10 February 1999.
 Online. Internet. [http://www.projo.com/report/pjo/stories/01/59512.htm.](http://www.projo.com/report/pjo/stories/01/59512.htm)
 12 February 1999.

Y2K : WHAT Could Go WRONG	%
Bad credit reports due to year 2000 errors	70
Loss of local electric power for more than one day	55
Litigation against corporate officers	55
Loss of international telephone services	35
Errors in 2000 tax reporting (1099 forms)	35
Errors in Social Security payments	35
Errors In first January paycheck	30
Errors/Delays in tax refunds	30
Delays / Cancel. of airline flights	25
Loss of local telephone services	20
Errors in motor vehicle records	20
Medical/hospital billing errors	20
Manufacturing shut-down for more than one day	20
Errors in bank accounts	15
Disruption of stock market trading	15
Shut-down of pharmaceutical manufacturing	15
Errors in hotel reservations	12
Errors in prescription dates	10
Delays in parcel deliveries	10
Water shortages/rationing	7
Corporate bankruptcy	5
Food shortages / rationing	3
Death or injuries	1