

# *International Journal of Frontier Missions*

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### **Cover Photo**

A Kashmiri mother and child representing the unreached Kashmiri mostly located in Kashmir, Northern India. There are more than 4 million Kashmiri with only 200 Christians. Pray earnestly for the Kashmiri. Photo used with permission.

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# Y2K Missions Critical Systems

**A**D 2000 is fast approaching, and so is the Year 2000 (Y2K) computer problem. By now most missionaries and mission personnel are well aware of the upcoming crisis and the impact it is predicted to have on Western society, with the likelihood of a devastating impact upon the Two Thirds World. Based on research and prayer as editor of the IJFM, I predict that Y2K will have a major impact on the world, on the infrastructures of most countries, on the economy (both national and global), on communications as a whole, as well as on the supplies of basic commodities.

For that reason IJFM is dedicating this entire Spring 1999 edition to Y2K as it relates to missions. It would be irresponsible not to address it (or to address it inadequately) since missions is by no means immune.

What are the critical systems in missions that may be disrupted? What must we look at, deal with and fix for missions to thrive through the Y2K crisis and beyond? First of all, we need to consider our own computers, needs and finances and have contingencies in place. The whole area of mission finances needs to be considered, both on the international scene (transfers of finances internationally may be disrupted), and the ongoing flow of support back home as well as extra cash on hand that missionaries will need, which will vary from country to country.

There also is the critical communications system. If telecommunications fail, or if there is a major disruption, including in email, how will that effect communications in the mission, between missionaries, intra-missions and with the mission agency back

home? Then there is the critical concern of extra food and supplies, and the extra funds needed to purchase them.

As you look at the contents of this Special Edition, and please take a good look, you will notice that the various articles are arranged in a developing sequence that will help you to understand the nature of the problem as well as assist you to make a proper response.

The first two articles deal with the Y2K problem as it relates to missions. Both Pete Holzmann and Grace Wiebe address the problem, including the all important ingredient of helping us predict the potential seriousness of Y2K. Holzmann, who speaks from a more technical perspective, is more optimistic than Wiebe, who speaks from a more generalized perspective. Both sides need to be heard and prayed about. The kind of preparation we make in the "missions critical systems" is directly related to our perspective of the seriousness of the crisis.

To help us in this area it won't work to go to the polls. We will have to go to people who know, who understand computers and the Y2K problem. Michael Goodfellow is such a person. As a computer programmer he gives us an insiders and unbiased view of the nature of the problem and the likely scenarios that may eventuate. Note Goodfellow only writes as a programmer, not as a missionary, nor even as a Christian. Nevertheless, as a programmer we can glean invaluable insights from him, both as to the nature of the problem as well as how we should respond. Goodfellow in his second article presents both a best

case and a worst case scenario, and note that the best case scenario is not all that good. Along with Wiebe, Goodfellow would agree that we can exclude the minimal impact. Both authors agree that we in the West (as well as around the world) will definitely feel the Y2K impact. It will not be a mere so called "bump in the road."

Most important of all, however, we have to go to God and listen to Him. Getting God's input is indeed the most critical aspect. Y2K is not just a technical problem, it has a more significant spiritual dimension. If in fact Y2K will make a significant impact on our society and world, we need to see it with spiritual eyes from God's perspective. We need to assess it from His purpose and plan. So we need to look at what God says about Y2K. The prophet Isaiah does address Y2K, of course not in the technical sense, but in the type of problems, crises, and judgments that have come upon God's people and the world in the past, which may again be what God is doing today.

Y2K is then a call to repentance, both on a personal level as well as on the part of the Church and Missions. We need to make sure that our hearts are Y2K compliant. Will we personally, as well as our mission, survive the crisis, even if it is a major one? Will we know how to rely on God when finances, food and communications fail?

If this happens, Y2k then becomes our finest hour. We need to believe and repent for ourselves, for

*(Continued on page 55)*

our nation, as well as for the peoples God has called us to serve in His name. It is a call to renewal of faith and cooperation with God and with each other as we face the crisis .

Perhaps, as never before and especially for us in the West, we are going to have to trust God's Word, and learn how to live in times of crises, deprivation and confusion; in times of want of ease, luxury and plenty. Could it be that God is calling us back to simplicity, helping us get off the treadmill, and fully trusting in Him who stills the storms and feeds the bird of the air—trusting in our Sovereign and Benevolent Lord?

This is not to say we don't need to fix our computers or that contingency plans are irrelevant. Rather it means being guided as Joseph was, who not only saved himself and his family, but saved Egypt and the world from their crisis.

The last two articles are reports by two major mission agencies regarding Y2K. Jason Mandryck writes about "The Millennium Bug and Missions" which is written from the WEC perspective. The second is the Youth With A Mission statement on Y2K. Both articles are very revealing since they give us insight into what mission agencies (at least two major ones) are telling their people what to do in this crisis.

Obviously, much more can be written about Y2K including as it relates to missions. You will notice that the articles in this edition are replete with resources on this topic. Our prayer is that the Lord would guide you, and all His mission efforts to assess the Y2K crisis, make the appropriate preparations and come through it with renewed faith, hope and strength in order to finish the task of world evangelization in AD 2000 or soon there after. So be it, for

the glory of our God.

*Hans M. Weerstra*  
*IJFM Editor*  
*Spring 1999*  
*El Paso, Texas*

# What's Going to Happen? Assessing Y2K for Missions

*Y2k is a serious problem, especially in the developing world. You need to seriously deal with it both personally and in your mission organization. However, the most serious Y2k risk is not technical, but societal. If public panic arises, the doomsayers will have won. Just as with fears of a run on the banks, if society panics about Y2k, it really could become a disaster.*

by Pete Holzmann

**Y**ou're a worker in Zimbabwe, and urgently need some medical advice from a colleague in Sweden. But it's January 10, 2000, and the entire Zimbabwe telephone network has been cut off from the rest of the world because it hasn't been upgraded to take care of Y2k. What a nightmare. Some people must prepare for just such a possibility.

At midnight on December 31, an elderly man with a computer-controlled pacemaker begins to cross a busy street with computer-controlled street lights. Suddenly, the man's pacemaker, the lights, and even all the cars on the street don't know what year it is! Imagine the horror.

Horror? Nope. Pacemakers, street lights and cars don't care what year it is!<sup>1</sup> Y2k, The Millennium Bug, the Year 2000 Problem could it be the day the computers die, and we'll all finally live at normal speed again? Or will anyone even notice? Just about everyone has heard about this worldwide problem. But few of us know the facts.

Have you been ignoring Y2k, perhaps, because you've never used a computer? Please read this article and find out what you need to do. None of us can afford to ignore Y2k, even missionaries working in remote African villages.

Have you become so alarmed by what you've heard and read that you are making some significant lifestyle changes? Perhaps, you've come to believe those who say there's a strong possibility December 31, 1999 will be "The End Of The World As We Know It." Please read on; you may discover facts allowing you to take simpler, less costly precautions. In any case, my prayer is that you'll learn enough to carry an important message to those around you:

Y2k is a vital and expensive problem. We all need to deal with it. If we do our part, we need not worry about long-term consequences.

## Three Major Questions

In what follows, you will find answers to the three major Y2k questions: (1) How serious is the Y2k problem? (2) What do we need to do about Y2k? (3) How do we respond to people who say . . . ?

Throughout this report I've tried to supply you with verifiable facts rather than biased opinions. My personal Y2k slogan is: "No Hype, No Hysteria!"

Do you ever travel other than on foot? Do you ever communicate other than face to face? Do you use money? If so, then the Y2k problem can affect you. You need to learn about Y2k, and deal with its impact on your life.

Yes, it is serious. Are you ready to do business in the year 2000? If you think you are, have you properly tested all your systems to make sure you won't have problems? Have you talked to your business suppliers and other business partners to be sure they are ready?

Y2k is a foreseeable problem. If you ignore it, your organization could go under. Your officers and directors could be held personally liable in donor lawsuits.

Y2k is a business problem. Business decisions are required to allocate appropriate money, time, and human resources. Decisions about legal and operational risks to your organization need to be made at the highest executive levels.

Ignoring the problem is not a solution, but a way to increase your chances to get hurt. Even if you have no computers,<sup>2</sup> you still need to discover whether your bank and other vendors are taking care of the problem. You don't want to be a customer of a bank that won't be ready!

What's the issue? Some computer software sees "99" as "1999", but does not see "00" as "2000".<sup>3</sup> If this bug is not fixed, various things will stop working correctly. For example, financial calculations may be wrong ("your credit card expired in 1900!"); bank vaults may unlock at the wrong time

("It's Monday 1/1/1900, not Saturday, 1/1/2000").

## Understanding the Problem

First, make sure you understand a few important details left out by almost everyone who talks about Y2k. Attention to these details will give a balanced view of the situation.

**Critical vs. non-critical errors.** Some claim a computer-controlled systems can't survive unless they are 100 percent Y2k compatible. In reality, only critical defects need to be repaired for service to continue. For example, true critical Y2k defects in electric power delivery systems are extremely rare, i.e., that would cause a serious interruption in power delivery; on the other hand, there are many non-critical Y2k power problems involving accounting reports.

**Contingency vs. real-world planning.** When faced with a difficult, complicated situation, many people panic about the complexity itself, believing Murphy's law: "If anything can go wrong, it will go wrong." Fortunately, Murphy's law is only valid as a design idea, not as something to apply in day to day living!

**Contingency planning when designing systems.** When designing a safe airplane, it is best to assume almost any part can fail. We then build the plane so it will continue to fly even if some parts fail.

Real world planning applies when preparing to actually use a product. When we prepare for our next trip, it would be foolish to assume every element of the airplane will fail. If that were actually true, nobody could ever fly! In fact, loose talk about bombs and such is illegal in airports for exactly this reason. It falsely incites panic.

It's important to remember that in the real world complex systems, whether aircraft or power grids, usu-

ally function correctly even when several of their parts are broken. That's how they are designed, and that's how they operate!

**Legal Realities.** Compliance Statements. We live in a selfish, greedy, lawsuit-happy society. People who suspect they could earn a lot of money through a lawsuit are likely to make the attempt. As a result, corporations are reluctant to say clearly

*Make sure you understand a few important details left out by almost everyone who talks about Y2k. Attention to these details will give you a balanced view of the situation.*

what is or is not ready for Y2k, not because they don't know, but because their lawyers warn them to be careful. Thus, when asking your business partners about Y2k, use a friendly, practical approach that asks whether they have discovered any critical or non-critical Y2k issues, and when they expect to have all of the critical issues resolved.

## How Serious is the Problem?

Let's look at it from three perspectives: (1) How much it will cost to fix, (2) What may go wrong at the beginning of 2000 even with the efforts in place to solve the problem, and (3) How well (or poorly) the world is doing about solving the problem.

**How much will it cost?** The most up to date, unbiased assess-

ments<sup>4</sup> predict as much as \$200 to \$300 billion dollars will be spent globally to solve the problem over a five year period. This does not include any litigation costs. So it really is serious. To place these huge numbers in perspective, \$300 billion is less than 0.2 percent of worldwide GDP of over \$150,000 billion<sup>5</sup> over the same period. Most economists see a small overall economic effect of Y2k. Other global economic crises are far more worrisome!<sup>6</sup>

**What may go wrong?** Can anyone accurately predict what will happen on 1/1/2000? I believe investigating the facts and applying some wisdom allows us to develop a clear understanding of the situation. Many of the problems listed here are already visible today.<sup>7</sup>

If your bank does not upgrade its software, it may be unable to continue automated banking transactions with the rest of the financial community. Worse, its own accounting system may revert to manual entry of interest payments and so forth. Make sure you are using a Y2k-compliant bank! (If they've recently replaced their software, updated monthly statements, offered new web banking features, you're probably OK. But check anyway!)

Millions of PC's around the world will need to have the correct date entered, and possibly rebooted. I can visualize agents walking down a row of reservation terminals in a big airport, typing in the necessary DOS command "date 1-1-2000" or clicking on the Windows time button.

Many nations around the world are far behind in their Y2k work. Mission organizations are well advised to develop contingency plans for getting at least a month of funds into the hands of their field people. Some medical devices that schedule advanced treatments (such as dialysis or chemotherapy) will need to be manually set

if their software is not upgraded.<sup>8</sup> Many marginally profitable businesses are shutting down rather than investing in expensive Y2k repairs. This is an ongoing process that began several years ago.

Most of us will suffer minor inconveniences. For example, many VCR's will no longer remember the correct date. Airport operations may be slow for a time due to manual operation of uncorrected baggage or ticketing systems.<sup>9</sup> Some features on older telephone systems may not work correctly.<sup>10</sup> Traffic signals may switch from weekend to weekday timing patterns.

A few of us will encounter a major problem. Yes, in a few localized places, especially internationally, there will be a significant breakdown in services. This is mostly because there are still too many people completely ignoring the problem. Phone networks in some developing nations may not be upgraded in time, isolating them from the rest of the world (to avoid billing problems).<sup>11</sup> Older accounting software will not work. Custom scheduling systems for ministry radio station broadcast control will break down, and so forth.

#### *What's being done about it?*

On the one hand, many people are clearly over-reacting to the problem. For example, many fear widespread blackouts, even though there is little chance that power delivery, anywhere in the world, will be seriously affected by Y2k (see How Do I Respond To Other People below).

Sadly, many are ignoring the issue, even though we know that significant sums must be spent to repair the Y2k problem, and there are many serious ways this affects us personally and in our communities. Many companies and governments (especially local governments) haven't taken the first step. They are not even aware of the problem.

For example, in June 1998, the Russian Atomic Energy agency said "We don't have any problems yet. We'll deal with the problem in the year 2000."<sup>12</sup> Fortunately, this attitude is not widespread.

### **The Business Arena**

We need to take a look at how a few business arenas that are dealing with Y2k, and also examine the situation from an international perspective.<sup>13</sup>

**Power:** Experts fully expect power delivery in the USA to continue on 1/1/2000, with possible short-term interruptions in localized rural areas.<sup>14</sup> Even the skeptical Sen. Bennett has reduced his "blackout predic-

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tion" from 40% to 4%.<sup>15</sup> An industry-wide Y2k test was run on April 9, 1999, with another one coming in September, just to be sure.<sup>16</sup> Why such confidence? Because critical power delivery systems (worldwide!) generally do not depend on dates.<sup>17</sup> Non-critical billing and administration functions are still at risk. There's much work yet to be done, but no reason to panic.

**Banks:** As noted above, the financial community is working hard to take care of Y2k. The good news—

initial financial transaction tests have been completely successful. However, the remaining problems are still large. In the US, the FDIC recently reported that of all federally insured banks, three percent are currently behind in their repair work<sup>18</sup>. The situation is worse in many international arenas.

**Credit Card Transactions:** Credit cards will work. As of 12/98, 45% of all credit cards had expiration dates after 2000.<sup>19</sup> About one in a thousand terminals can't handle such a card, requiring a manual call for approval.

**Telecommunications:** Ensuring reliable phone service on 1/1/2000 is both an imperative and daunting task; phone billing is highly date dependent.<sup>20</sup> The ITU is carefully tracking the issues in every nation, and encouraging massive testing of repaired systems. So far, the results have been very encouraging; there's no reason to expect failure of telephone service in any major nation.<sup>21</sup> The primary current concern is Sub-Saharan Africa, which has insufficient funding to accomplish the needed upgrades; they are asking the World Bank for funding.

**Air Transport:** Aircraft have been tested extensively;<sup>22</sup> and they will continue to fly. The big problem is scheduling, ticketing, baggage control and other non-flight systems; massive work is underway to ensure every international airport will continue to function properly.<sup>23</sup> Repairs to the air traffic control system are now complete and are being tested.<sup>24</sup> While some slowdowns can be expected, especially in remote international areas, commercial flights will continue throughout the night on 12/31/99.

**Government:** Government responses to Y2k have mostly been "too little, too late." There's very little political gain to be found in spending money on a problem few can see!

That's the bad news. For example, the US Government Y2k report card<sup>25</sup> currently shows a "C+" grade, with 20 of 24 departments expected to have all critical systems repaired on time. The good news? Governments are able to take action as a whole—once they put their minds to it. A lot of energy is being put into the Y2k problem now. Even with additional resources, however, it is too late to fix everything in time. There will be visible slowdowns and government service failures over the next year.

Globally, western nations such as the USA, Australia, Ireland, Israel, South Africa, UK, etc., are expected to get through with few problems. About half the nations are working hard on the problem. Almost all at least have an awareness of the issues. However, some developing nations have done little or nothing about Y2k, and may suffer severely for their lack of preparation.<sup>26</sup> The UN is taking an active overall role; its members have agreed on a set of guidelines for dealing with the Y2k issue.<sup>27</sup>

The major issues in developing nations are lack of awareness, lack of funding, distractions from financial crises, and lack of qualified experts.<sup>28</sup> Some nations have an advantage in dealing with Y2k: they still do a lot of their administrative work manually rather than by computer. Pens and paper are, of course, Y2k compatible!

### What Must we Do?

Whether you are a concerned individual or represent an organization, the primary steps in responsibly dealing with the Y2k problem are:

—AWARENESS: Acknowledge that there's a problem.

—SURVEY: Check your organization and outside connections to identify critical systems. Strongly encourage your ministry partners to do the same.

—EVALUATE: Create and imple-

ment a plan to evaluate which systems and connections actually have a problem.

—FIX: Develop and implement a plan to resolve critical issues and cope with non-critical issues.

—TEST: the results, well before 12/31/99! This is important not only for your own confidence in moving forward, but also for ensuring that your workers and constituents can have confidence that your organization will thrive after 1999.

—PLAN FOR CONTINGENCIES:

*Test the results. This is important not only for your own confidence in moving forward, but also for ensuring that your workers and constituents can have confidence that your organization will thrive after 1999.*

For any operational areas that give you low confidence of successful operation in 2000, develop an alternative plan that will keep you in business. This is especially important in areas where a few hours of downtime could cause a critical problem; i.e., medical services, broadcast systems, etc.

**Survey.** This is something you need to plan based on your own organizational situation, and on the partners you work with. If you work in a developing nation, be aware that banking and telephone services may

be reduced or even unavailable for a time beginning on 1/1/2000. We should verify our bank's Y2k status. You may be able to do this check online.<sup>29</sup>

Individuals in many areas of the world need to check on the Y2k readiness of their health care and medical insurance providers. Medical administration is a nightmare even without Y2k date problems confusing the issue.

**PC Hardware & Software.** If you need to deal with Y2k on one or more personal computers, see Appendix 1 below for help on the basic technical issues. If you need to deal with large computers or software systems, or if you run a large organization, you need to get some technical help!<sup>30</sup>

**Other Equipment.** There's a lot of computerized machinery. Some people claim that televisions, VCR's, microwave ovens, breadmakers, cars, even hair dryers will shut down on 1/1/2000.

**Reality.** There is no evidence for any of these scenarios. Beware of such "urban legends." It is true that dates may be wrong in appliances that track the date (such as VCR's), but no expert suggests the equipment will fail to work!<sup>31</sup>

Does this mean we can ignore Y2k when it comes to appliances of various kinds? Possibly as most of us do not have any equipment where the date is critical to its operation.

If you do have such equipment (perhaps some hospital patient monitoring equipment? Broadcast antenna control systems?), you need to test that equipment and decide what to do if it is not Y2k compliant. (Example: our VCR will no longer hold the correct date. All of our other equipment doesn't care about the year.)

**Contingency Planning.** In "Western" nations, there's little need to hoard cash, as purchases using credit cards and checks will still work

fine. Debit card cash advances may be the best way to obtain cash internationally if there's trouble in 2000, as approval uses the credit card transaction system rather than bank transfers. Consider how do you prepare (or how should you prepare) for other emergencies? Do you have first aid supplies, flashlights, candles, backup power, some extra food in the pantry, extra water? All of these are good preparations in earthquake or tornado areas. They are quite reasonable suggestions for those who work in developing nations. In the Western world, I leave the decision to you.<sup>32</sup>

Example, my family keeps our pantry full of food in winter, as we are sometimes snow-bound. If serious problems cause stores to close for hours or even a few days, we'll be fine. My bank is ready for Y2k, so I'm not worried about cash supplies.)

**Information Contingencies** If you aren't confident your administrative systems are Y2k compliant, you need to prepare contingency plans for potential breakdowns. How will you print year-end statements for 1999 (or perhaps print them before the year ends)? How will you handle payroll in the first 2000 pay period? These questions and many more need to be answered.

What about records? Do we need backup copies of every conceivable bit of information? Hardly. Remember, the Y2k problem does not cause computers to crash, nor does it cause data to be permanently lost. On the other hand, as always it is helpful to have your own set of records in case your bank or insurance company gets confused.

### What about Doomsayers

Some doomsayers suggest we need to "head for the hills," buy weeks or months worth of food, obtain backup power generators, and generally prepare for the reduction of our

social services to the level of developing nations.

Sadly, much of this hysteria comes from within the Christian community. Motivations of such people must be questioned. Some of the best-known spokesmen have a hidden theological agenda, believing the world as

*Do you have first aid supplies, flashlights, candles, backup power, some extra food in the pantry, extra water? These are reasonable suggestions for those who work in developing nations.*

we know it must end in the next few years. Also, many doomsayers make a tidy profit from sales of their books and seminars.

To briefly introduce this topic, here are behind-the-scenes quotes from one well-known Christian doom-sayer, Dr. Gary North, whose web site communicates a grain of truth along with a bias (or "spin") that results in hysteria and hype. Check the end-notes and references for further information.

Of course I want to see y2k bring down the system, all over the world. I have hoped for this all of my adult life.

Doom and gloom will sell, as it has never sold before. I have positioned my name in the center of this fear. All I have to do now is to report bad news.<sup>33</sup>

The kind of world we really want to see can come only if the dead hand

of big government is pulled from off our necks. That monster has to be killed. The Millennium Bug is more likely to kill big government than anything we can imagine. As the Bible says, our redemption draweth nigh.<sup>34</sup>

### A More Balanced View

First, are you taking care of the Y2k problem in your own organization? No matter what part of the world you live in, thinking "It doesn't apply to us" is a sign of foolish ignorance.

Second, as Christians we are called to be prepared in season and out of season. Y2k will have an effect on people around the world. On 1/1/2000, every breakdown in the whole world will be blamed on Y2k, right or wrong. As Christians, we are called to be a light to the world. Are you prepared, spiritually, emotionally, and physically to help others who may be among those who are harmed by Y2k? Does your organization have a contingency plan to deal with potential problems?

Third, deal calmly with the hysteria, panic and doomsday scenarios. A spirit of fear is not from the Lord. Stay close to the Lord in prayer. Share His spirit of hope and love with those around you. Refer people to balanced, unbiased experts. I've prepared a web site of annotated references to unbiased information. After Feb. 1, 1999, visit <[www.icta.net/y2k](http://www.icta.net/y2k)>.

Fourth, remember that people hear what they want to hear. People who have come to a conclusion on Y2k are rarely willing to adjust their views. This is especially true if they have already taken action! We all want to justify our actions.

### Y2k Myths

With that context, here are brief responses to some of the more blatant myths relating to Y2k. (Earlier portions of this report have already provided you with all the facts needed to counter many doomsday scenarios.)

**Myth #1: All Critical Systems Will Fail (power, communications, transportation, finance).**

Doomsayers talk about the scary "embedded systems" problem, where an unknown quantity (50 million?) of tiny, hidden computers worldwide will fail on 1/1/2000 causing critical facilities to shut down. They say society's infrastructure is doomed unless these systems are all 100% repaired.

**Reality:** These embedded systems are real, but the problem isn't nearly as bad as described. I'll just mention three key points the doom-sayers ignore:

Critical systems are designed to work even with some parts broken. They operate all the time in such a condition!

Embedded systems that deliver services normally don't care about the date! For example, power plants deliver appropriate amounts of power, no matter what day it is.

Embedded systems problems that do crop up don't require months or years of repair work; normally they can be reset in seconds, or replaced in minutes or hours. Critical services normally can be placed under manual control. Also, the vast majority of "embedded system" critical failures I've seen can be readily solved through a manual reset/reboot. These solutions take seconds, minutes or hours, not weeks.

Is there still a concern? Certainly! But not about delivery of critical services in Western nations. The big problems requiring a lot of repairs involve planning, forecasting, and recording usage of services. Y2k failures in these areas would certainly be a serious problem, but the power will not fail for weeks, planes will not fall out of the sky, banks will not suddenly close on 1/1/2000.

Remember: there are serious problems in this area, especially in developing nations. Banking and com-

munication systems are the most vulnerable. Also remember: society copes with blackouts, crashes and other disasters every day.

There's no need to take what I'm saying on blind faith. Look at some of the doomsday Y2k predictions from the past and watch as we enter 1999:

—People originally screamed that the global credit card system was doomed: "Credit and ATM cards will no longer work. Has it ever struck you as odd that nearly every credit card expires in the year 1999?"<sup>35</sup> Today, the problem has been solved; 45% of

*As Christians we are called to be a light to the world. Are you prepared spiritually, emotionally, and physically to help others who may get harmed by Y2k?*

all credit cards now have expiration date after 2000.<sup>36</sup>

—There have been widespread predictions the airline reservation systems would fail in early 1999 when year-in-advance reservations would fall in 2000. Such predictions have proven false.

**Myth #2: Everyone's Pacemaker will stop!**

All kinds of modern medical devices contain computer chips, from insulin delivery systems to pacemakers. Will the medical establishment come to a screeching halt?

**Reality:** Health care providers have been working on these issues for several years. Certainly, some medical scheduling devices are at risk,<sup>8</sup> but

not therapy equipment such as pacemakers.<sup>37</sup> The main medical Y2k risk is in administration, record keeping and scheduling, not delivery of services.

**Myth #3: The total cost of repairs will be more than \$1 Trillion.**

Major consulting firms advertising for Y2k work, such as The Gartner Group, have estimated global Y2k costs as high as \$600 billion<sup>38</sup>, a trillion, or even more. Doomsayers such as Gary North put it at \$3 trillion.<sup>39</sup> They encourage clients to sign up quickly for their services, claiming there will be a drastic shortage of available technical staff as we approach 2000, with associated increases in the cost per hour of technical assistance.

**Reality:** Actual costs have turned out to be much lower than estimated by these firms. Gartner estimated \$30 billion for repairs of US Federal government systems. The latest report from the US is less than \$7 billion.<sup>4</sup> We're also seeing that there is no shortage of available Y2k technical staff; in fact, many Y2k technicians are out of work, now that the vast majority of repairs are complete.

## Conclusion

Y2k is a serious problem, especially in the developing world. You need to seriously deal with it both personally and in your organization. However, there's no reason to panic. Most personal computers and software will not be affected. The larger affected systems are mostly being worked on as you read this.

Yes, computer errors will cause serious problems in some local areas. Many faxes will have the wrong date; some databases and spreadsheets will have wrong calculations until they are fixed. Some medical systems will have to rely on manual rather than automated measurements for a time.

But the power grids will not shut down for days, the financial markets will not crash, airplanes will continue to fly. God is still in command; the tides will rise and fall, the sun and moon will maintain their course. And God's gift to mankind of intelligence and creativity will once again allow us to cooperatively solve issues that surface in the early hours of January 1, 2000.

The most serious Y2k risk is not technical, but societal. If public panic arises, the doomsayers will have won. Just as with fears of a run on the banks, if society panics about Y2k, it really could become a disaster.

The only thing we have to fear is fear itself. Roosevelt

God has not given us a spirit of fear and timidity, but of power, love, and self-discipline." II Tim. 1:7 "You will keep in perfect peace all who trust in you, whose thoughts are fixed on you! Trust in the Lord always, for the Lord God is the eternal Rock. Isaiah 26:3-4

## Appendix 1: Technical Basics

### —PC Hardware Issues

Do all PC's need to be replaced? Not even close! All Macintosh computer hardware is Y2k compatible. Over 90% of PC's will "roll over" to 1/1/2000 without being fixed. A small number of PC's need to have the correct date manually entered (once!) after 12/31/99. A very small number of PC's require a hardware fix BIOS chip update.<sup>40</sup>

Some folks claim a few older (especially 8086 and 286) PC's have an improperly programmed BIOS that sometimes reads the wrong date from the battery powered clock. A commercial software fix is available. (Note: The reality of this issue is disputed: I have been unable to confirm that it is real.)<sup>41</sup>

Yes, you do need to test your PC's. Free testing software is available.<sup>42</sup> There are two important tests. The first test checks for automatic date roll over; it decides if your PC will automatically change to 1/1/2000. If this test fails, try

the manual date-set-and-reboot test. In the rare case of a PC that fails this second test, you will need to spend some money fixing your computer (a BIOS upgrade is required). (Example, several of our 9 PC's will need the date entered on 1/1/2000. None of them need a BIOS repair.)

### —Software Issues

Most software works just fine no matter what the date. But you still need to test and verify! While many software packages, whether for Mac or PC, are ready for Y2k, many are not. Some examples of software that is not ready:

Peachtree for DOS before ver. 10;

Quicken for DOS before ver. 5.0;

Simply Accounting versions 1-3;

Lotus: 123 (DOS v1), cc:Mail before v8, and Symphony. Check the footnote "43" for links to lists of compliant/non-compliant software.

### —Custom Software & Data

The most difficult software issue involves custom programs, and custom databases and spreadsheets. Your employees need to verify that the custom data they work with will properly handle the century transition.

Available software can help with this daunting task. For example, Symantec's Norton 2000 will check all popular spreadsheet and database file formats, tell you where there's a data or formula problem, and offer to fix it for you as well! (Expert readers will recognize this is not always a complete solution, but it's good enough in most situations.) (Example: My critical software is Quicken 98 (accounting) ECCO 4 (contact manager), Pegasus Mail (e-mail), and Cheyenne (backup software). These are all Y2k compliant.)

## Appendix 2: Y2k Web Sites

Note: I find very little published information that is factual and unbiased (i.e., free of hype and hysteria). The annotations below give some cautions as you explore these Web resources for yourself.

After reviewing over a hundred web sites recommended by many "experts" and by popular Christian commentators, I've concluded that it is almost impossible to find really good, unbiased Y2k information on the Internet. As a result, this list is far shorter than I would like.

If you don't see a site listed, it is almost certainly because I cannot recommend it without reservation. I do recommend these sites (as well as a number of additional sites referenced in the End Notes that follow). Even so, please remember: reader beware!  
<[www.gospelcom.net/ccmag/y2k](http://www.gospelcom.net/ccmag/y2k)> A positive "spin" on Y2k from a North American Christian perspective.  
<[www.jps.net/bygrace/general/Y2K.html](http://www.jps.net/bygrace/general/Y2K.html)> Well-researched, balanced article. Recommendations assume panic will happen, which I consider unlikely as more good news emerges.  
[www.sangersreview.com](http://www.sangersreview.com) A useful concise daily summary of Y2k news reports from around the world.  
<[www.y2knews.com](http://www.y2knews.com)> References without comment to Y2k reports in print media. <[www.zdy2k.com](http://www.zdy2k.com)> Ziff-Davis provides extensive Y2k resources.  
<[www.sba.gov/y2k](http://www.sba.gov/y2k)> US Small Business Administration Y2k info, including how to test your PC. <[www.y2k.gov](http://www.y2k.gov)> US main Y2k site, with links to every state Y2k site. <[www.fda.gov/cdrh/yr2000/year2000.html](http://www.fda.gov/cdrh/yr2000/year2000.html)> US Food & Drug Administration database of medical device manufacturer Y2k reports. A good starting place for research if you have or use medical devices. <[y2k.policyworks.gov](http://y2k.policyworks.gov)> Master reference database of product Y2k compliance information, with links to other major databases as well. Information in the main database is sparse. Telecommunications product database is very good. <[www.rx2000.org](http://www.rx2000.org)> Medical industry non-profit awareness and information sharing consortium. Some valuable information is found here, along with the usual doomsday quotes about how bad the situation could theoretically get.<sup>44</sup> <[www.vendor2000.com](http://www.vendor2000.com)> Compliance information for tens of thousands of computer hardware and software products.

### What else is out there?

Financial experts, economic experts, historians and more are "waking people up" to an issue that they themselves do not deeply understand. There are doomsday sites for churches, for women, for the health-conscious, for those seeking financial wisdom, for survivalists, and more.

Most Y2k web resources simply refer to each other, and to a small number of "experts" who generally accept only the worst-case interpretations of

events. There are vanishingly few true experts out there.

## End Notes

- 1 With apologies to Dave Barry, who can tell a joke better than anyone else on the planet. Dave's take on Y2k is at <[www.mercurycenter.com/columnists/barry/docs/db010299.htm](http://www.mercurycenter.com/columnists/barry/docs/db010299.htm)>.
- 2 Do you just want basic Y2k information, as a non-technical person? Here's another resource: the US government toll-free Y2k information line. From 9-8 (Eastern Time) call 1-888-USA-4-Y2K.
- 3 Why did this happen? Because even today, people prefer to write "98" rather than "1998." It's quicker and easier. Unfortunately, it's also harder to write software that correctly deals with 2 digit years. (It has nothing to do with saving space in computers.)
- 4 See the comprehensive economic review *The Economist*, 19 Sept. 1998. <[www.economist.com/editorial/freeforall/19-9-98survey/index\\_bug9.html](http://www.economist.com/editorial/freeforall/19-9-98survey/index_bug9.html)>. The US government expects to spend \$6.4 billion; this estimate is expected to grow a bit more during 1999. See US government OMB report, 12/98, at <<http://cio.gov/decdraft6.htm>>.
- 5 Derived from data available online at <[www.polisci.com/economy.htm](http://www.polisci.com/economy.htm)>.
- 6 US economic estimates are in the range of a 0.1 to 0.2 percent GDP slowdown due to Y2k (<[www.fcw.com/pubs/fcw/1998/0427/web-fry-4-28-1998.html](http://www.fcw.com/pubs/fcw/1998/0427/web-fry-4-28-1998.html)>). Other areas of the world receive estimates as high as 0.5 percent over the short run. Analysis of major disasters in the past has shown that while they can be very expensive on a local cost basis, they do not show up visibly in the global economy in the long run. The economic benefit to those making repairs balances out much of the economic devastation.
- 7 Most of these examples have been personally tested or verified by the author. Additional references are provided in certain cases.
- 8 <[www.baxter.com](http://www.baxter.com)> A great example of medical systems Y2k impact analysis. Of their 339 products, 23 involve various kinds of patient or medical services reporting 12 of these (52%) have a Y2k problem of some sort. The other 317 products are involved in direct delivery of medical services (blood therapy, heart disease, kidney dialysis, medication delivery). Of these, 6 related kidney dialysis products (2%) must have their schedules set manually if not upgraded. <[www.ge.com/medical/year2000](http://www.ge.com/medical/year2000)> describes General Electric's medical system Y2k issues. Again, the problems generally involve dates on reports, not failure of equipment and certainly not failure to deliver medical services.
- 9 IATA summary, <[www.iata.org/y2k/articles.htm](http://www.iata.org/y2k/articles.htm)>
- 10 Here's a good example of what can go wrong with a telephone system: "What happens if I don't upgrade my system? Your telephone system will still continue to function and process calls correctly. What will happen, however, is that day of week and date will not be displayed properly on display telephones. Also, dates will not print correctly on reports, and sequencing in reports will be incorrect since 00 will come before instead of after 99 your [call accounting] output will continue to accumulate correctly, [but] you will need to turn off any features you have activated that automatically direct calls based on day of week." (<[www.executone.com/yr2000.htm](http://www.executone.com/yr2000.htm)>) See <[www.fcc.gov/year2000/links-manufact.html](http://www.fcc.gov/year2000/links-manufact.html)> for a complete reference list.
- 11 A good overview of telecommunication issues is at <[www.fcc.gov/year2000/faq.html](http://www.fcc.gov/year2000/faq.html)>. One quote: "U.S. consumers may lose international service options as a result of Y2k. Some larger carriers are considering the option of not connecting to systems that are not Y2k compliant. Countries in South America, Russia, Eastern Europe, Central Africa, the Middle East, and others are still in the initial stages of awareness and assessment. It is possible that telecommunications services currently available in the U.S. that use systems in these regions will not be available (temporarily or permanently) to U.S. consumers as of January 1, 2000."
- 12 Spokesman Vladislav Petrov, widely quoted on 6/19/98, <[abcnews.go.com/sections/tech/DailyNews/y2k\\_russia980619.html](http://abcnews.go.com/sections/tech/DailyNews/y2k_russia980619.html)>
- 13 Links to national Y2k web sites can be found at <[www.itpolicy.gsa.gov/mks/yr2000/g7yr2000.htm](http://www.itpolicy.gsa.gov/mks/yr2000/g7yr2000.htm)>.
- 14 An expert analysis of power delivery issues is at <[www.albany.net/~dmills/fallback/chapt5.htm](http://www.albany.net/~dmills/fallback/chapt5.htm)>; see also the latest senate summary, as reported at <<http://www.sjmercury.com/business/top/030603.htm>>.
- 15 Recent interview, at <[www.worldnetdaily.com/bluesky\\_exnews/19981221\\_xex\\_un\\_plans\\_glo.shtml](http://www.worldnetdaily.com/bluesky_exnews/19981221_xex_un_plans_glo.shtml)>.
- 16 See <[www.fdic.gov/about/y2k/newsletter/1298-energy.html](http://www.fdic.gov/about/y2k/newsletter/1298-energy.html)>. An additional quote: "Forty-five percent of all (critical and non-critical) Y2k power issues have been dealt with," said Gerry Cauley, Y2k Project Manager for the North American Electrical Reliability Council. "We don't feel there are any types of failures that will directly jeopardize the ability to provide electricity to all customers."
- 17 I have yet to discover a critical Y2k problem in a power delivery "embedded system," other than simple issues of PC-based date change (which requires typing in the correct date on a keyboard).
- 18 FDIC statement, <[www.fdic.gov/about/y2k](http://www.fdic.gov/about/y2k)>.
- 19 News report quoting VISA spokesman, <[www.techweb.com/se/directlink.cgi?IWK19980112S0065](http://www.techweb.com/se/directlink.cgi?IWK19980112S0065)>.
- 20 See the FCC Commissioner's statement on this, at <[www.fcc.gov/Speeches/Powell/spmcp818.html](http://www.fcc.gov/Speeches/Powell/spmcp818.html)>.
- 21 See the "what's new" section at <[www.itu.int/y2k](http://www.itu.int/y2k)>. Tests have been conducted (all successfully) between Hong Kong, Australia, Denmark, Germany, USA, and more.
- 22 A Boeing statement, following disclosure of some cockpit indicators that do not show the correct year: "Boeing considers these Y2k issues significant because they generate flight deck effects that are inconsistent with the company's 'quiet, dark' flight deck philosophy. However, no flight critical effects exist, and safety of flight is not compromised. In addition full and normal functionality of the FMS [Flight Management System] is available." <[www.boeing.com/commercial/aeromagazine/aero\\_03/textonly/sy01txt.html](http://www.boeing.com/commercial/aeromagazine/aero_03/textonly/sy01txt.html)>
- 23 See IATA summary at <[www.iata.org/pr/pr98dec.htm](http://www.iata.org/pr/pr98dec.htm)>.
- 24 Interview with Ray Long, FAA Y2k coordinator, December '98: <[www.gcn.com/gcn/1998/december14/52a.htm](http://www.gcn.com/gcn/1998/december14/52a.htm)>.
- 25 The latest government Y2k report card is always found at <[www.house.gov/reform/gmit/y2k/index.htm](http://www.house.gov/reform/gmit/y2k/index.htm)>, while an easy to read summary is at <[www.freedom.gov/](http://www.freedom.gov/)>

- y2k/grades/grades.asp>.
- 26 The OECD has put together a comprehensive overview at <[www.oecd.org/puma/gvrnance/it/y2k.htm](http://www.oecd.org/puma/gvrnance/it/y2k.htm)>.
- 27 UN guidelines, <[www.un.org/members/yr2000/e98140.htm](http://www.un.org/members/yr2000/e98140.htm)>
- 28 There's some information on Y2k and developing nations at <[www.undp.org/info21/new/n-y-dc.html](http://www.undp.org/info21/new/n-y-dc.html)>. Be wary when reading. I discovered many wrong conclusions drawn based on factual errors involving misinterpretation of data.
- 29 <[www.amisafe.com](http://www.amisafe.com)> has official statements from banks and other industry sectors. Note these can be hard to understand clearly! It may be easier to just ask your bank.
- 30 There are many organizations providing Y2k technical help. <[www.icta.net/y2k](http://www.icta.net/y2k)> has a section referring to some that specialize in assisting Christian ministries.
- 31 See <[www.nao.otis.com/y2k\\_letter.html](http://www.nao.otis.com/y2k_letter.html)> for a statement from Otis Elevator, the largest elevator vendor. They have tested all systems and are confident elevators will function.
- 32 The Gartner group has some suggestions for personal planning. Note they offer a generally pessimistic view of the overall situation (in line with their push to pull in more corporate clients). <[gartner5.gartnerweb.com/public/static/home/00073955.html](http://gartner5.gartnerweb.com/public/static/home/00073955.html)>
- 33 See <[www.serve.com/thibodep/cr/y2k.htm](http://www.serve.com/thibodep/cr/y2k.htm)> for a comprehensive analysis of Dr. North's background.
- 34 Summer 1998 publicity brochure "RGNP98", page 22.
- 35 From a 2/97 report at <[www.rit.edu/~jse9787/papers/infoterm.htm](http://www.rit.edu/~jse9787/papers/infoterm.htm)>.
- 36 <[www.techweb.com/se/directlink.cgi?IWK19980112S0065](http://www.techweb.com/se/directlink.cgi?IWK19980112S0065)>
- 37 <[www.y2k.gov/java/whatsnew1.html](http://www.y2k.gov/java/whatsnew1.html)> provides details debunking several common doomsday rumors.
- 38 An LA Times report, 11/3/97 p. A1, A16, quotes Matt Hotle of Gartner as saying, "all of this stuff is thumbnail [guesses]; it includes costs of equipment that would have been replaced anyway; and does not account for any recent improvements in Y2k repair techniques."
- 39 North summer 1998 publicity brochure "RGNP98", page 4. 500 billion lines of code x \$6/line = \$3 trillion.
- 40 See <[www.award.com/tech/y2k.htm](http://www.award.com/tech/y2k.htm)> for information on PC's with Award BIOS dated 26 April 1994 to 31 May 1995. These are the only PC's I've ever found that require an upgrade.
- 41 This problem is known as Time Dilation or the Crouch Echlin Effect, so named after its discoverers. See <[www.dell.com/year2000/tech/notes.htm](http://www.dell.com/year2000/tech/notes.htm)> for more information. Crouch and Echlin sell a software fix for \$40 per computer; <[www.nethawk.com/~jcrouch/dilation.htm](http://www.nethawk.com/~jcrouch/dilation.htm)> has more information. Intel claims the problem does not exist; I'm not so sure. (See <<http://www.intel.com/support/year2000/c-efaq.htm>>.)
- 42 Ignore the highly advertised panic-inducing tests that check up to 14 different items, most of which have nothing to do with the correct functioning of your system! Visit <[www.unicore.com/mpcdownload.html](http://www.unicore.com/mpcdownload.html)> to get a free test program. If your PC fails this automatic rollover test, use the DOS date command (or the Windows Date/Time control panel) to set the date manually to 1/1/2000, and reboot. (Remember to return to the correct date when you're done, and don't use scheduling software during this test next month's appointments might be deleted!) Almost every PC can be "fixed" through this simple procedure. For an automated test of both the rollover and reboot scenarios, visit <[www.righttime.com](http://www.righttime.com)>. Note their recommendation that you buy some software from them if the rollover test fails. Most people don't need the software; it is only useful if your computer really must automatically rollover the date from 12/31/99 to 1/1/2000 (e.g., a date-dependent life support system) and you can't afford to manually type in the correct date, once, after 2000 begins.
- 43 Links to some lists of compliant/non-compliant software: Overall chart: <[www.cnet.com/Content/Reports/Special/Y2k/chart.html](http://www.cnet.com/Content/Reports/Special/Y2k/chart.html)>. Microsoft products: <[www.microsoft.com/technet/topics/year2k/product/product.htm](http://www.microsoft.com/technet/topics/year2k/product/product.htm)>. Intuit/quicken: <[www.intuit.com/support/year2000.html](http://www.intuit.com/support/year2000.html)>. Lotus products: <[www.lotus.com/home.nsf/tabs/y2k](http://www.lotus.com/home.nsf/tabs/y2k)>. Borland/Inprise products: <[www.borland.com/devsupport/y2000/products.html](http://www.borland.com/devsupport/y2000/products.html)>. Claris/
- Filemaker: <[www.claris.com/about/year2000.html](http://www.claris.com/about/year2000.html)>. Corel/Wordperfect products: <<https://livewire.corel.com/cfscripts/y2k/index.cfm>>. Dbase-related databases: <<http://www.iag.net/~philb/clipy2k.htm>>. (Only Dbxl is truly broken.)
- 44 Rx2000 concerns focus on Y2k's impact on medical administration and clinical record-keeping (lab results, etc.) See <[www.rx2000.org/data/presentations/presents.html](http://www.rx2000.org/data/presentations/presents.html)>.
- 45 Y2k analysis requires an understanding of people's expertise in the areas they comment on. I have 29 years of computer system design and development experience, ranging from mainframes (COBOL, etc.) to "embedded system" microchips ("assembly language" for many CPU's). My education is in computer hardware (electrical engineering, specializing in semiconductor electronics and digital communications); my experience is primarily in software and "firmware" (software in embedded systems). In 1993, I moved to Colorado Springs after many years as a technical and management consultant in Silicon Valley. While there, I contributed to the development of many products commonly used today, including early microcomputers, digital telephones and laser printers. Hosted By: Gospel Communications Network. Report problems to: <[WebServant@icta.net](mailto:WebServant@icta.net)> Copyright C1999 ICTA.

**Pete Holzmann**  
is the Global  
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President of  
the International Christian  
Technologists' Association  
(ICTA). Drawing on close to  
three decades of high tech  
experience, Pete's technical  
background ranges from  
mainframe computers to PC's  
and "embedded systems."

# The Millennium Bug: Missions Response

*The whole Y2K situation is that everything about it is uncertain. However, if we keep firmly fixed on the Lord and on His Kingdom, we can be assured that He will accomplish His will in and through us. God is in control and will bring glory to Himself through this situation. Let's cooperate with Him and with each other concerning what is to come as He brings us ever closer to reaching the unreached and ultimately on being with Him forever!*

by Grace Wiebe

**B**y now, it is likely that many of you have heard of the now-becoming-famous Y2K Millennium Bug. The result of the "Y2K Bug" is one of the fast-approaching dilemmas/potential crisis of our century that is, in many ways, forcing us to make some kind of decision about how we will choose to respond to what we hear or read about this coming event which is expected to take place on January 1, 2000. Individuals, companies, churches, ministries and governments around the world are having to grapple with many serious questions surrounding this issue.

It is my desire to give you the opportunity to become more informed about what the Y2K Bug, especially how it is expected to potentially affect our lives, recommend some preparations that you can consider for your situation/s, tell you how you can access some helpful resources, and how missions, sending churches and their missionaries may want to prepare for what lies ahead. This could very well set the stage for missions and churches or local overseas fellowships to partner together to be a unified refuge and light in a potentially dark time.

## Addressing the Issue

Since early this year there has been a dramatic increase on the part

of the the media to address the Y2K problem. The internet is now loaded with thousands of articles and resources to help people think through the situation as it could relate to them and to draw their own conclusions.

Companies and some governments have been the first to address these issues, especially in western countries, and interested individuals have been doing their own research and beginning preparations. However, only recently, after over a year of my own internet research on the subject, have I seen increasing information on Y2K from a Christian perspective.

Even more recently I've begun to see that churches are beginning to see that this could potentially be leading us to our finest hour as the Church, and as a result, increasing numbers of churches are seeking ways to unite their efforts and preparations as congregations and city-wide churches in order to be a light and a refuge in a potentially dark time. Some of these resources are included in the internet resources noted below.

## The Mission Community

The intent of this article is to further address the Y2K issue in the mission community. Although there is growing interest, there appears to be little evidence to date that missions

are finding ways to respond to aspects of Y2K which can potentially greatly impact not only missions and missionaries, but also the ongoing ministry of the Gospel in various parts of the world.

Before I lay out some of the questions that need to be considered, and some potential responses, there are some things we need to be aware of.

### (a) Controversy

No one knows to what extent the world will be affected by the "computer glitch" on January 1, 2000. There are perspectives ranging from one extreme to the other—some saying that it will be no big deal, others in denial saying that little, if anything, will happen. (I have found that most people that say this have not done much research on Y2K.) Others again are saying, "the world will end." Yet others say the potential panic caused by the "doomsayers" will cause more problems than the Y2K Bug. This may be possible as well. Personally, I tend to think the truth may lie closer to the middle and leaning more to the negative side.

### (b) Potential Implications

You should know that the potential implications are far greater than the fact that your personal or company computer may not be Y2K compliant, and shut down or scramble the data so it doesn't function.

The scenario expected by many experts such as Ed Yourdon (one of America's senior mainframe computer programmers and author of two dozen books on programming; he and his daughter have written a book, *Time Bomb 2000*) and Gary North, Peter de Jager, Capers Jones and Michael Hyatt, etc., is quite severe. This is due to the fact that the infrastructures of civilized societies around the world are dependant on computers, many of which are still the old mainframe computers. Electricity, water, communication systems, transportation, etc., could very well be out of commission for some time after January 1, 2000. It doesn't take long to realize that our lifestyles could change quickly and dramatically and that survival could become a priority with potentially no electricity, water, food, most means of transportation, and much unemployment, etc.

#### *(c) Potential Duration*

You should know that no one knows how long these speculated effects might last. Some think it could range from a few days or weeks to a few months or many months. Most of the research I've done encourages confidence that the world will recover, but that it will likely take some time for that to happen.

#### *(d) Can It Be Prevented?*

You should know that governments and many companies have been spending millions and billions of dollars to have computer experts go through the millions of lines of computer code to correct the problem by making their computer systems "Y2K compliant." What is making it difficult to solve this problem is the fact that billions of microchips are embedded into computers as well as into many electrical appliances and systems around the world. These microchips are hard to locate, and if found, are very difficult, if not impossible, to correct.

Yet another problem is that if some computers are corrected to become "Y2K compliant," if a "Y2K non-compliant" computer communicates with the compliant computer; or if a non-compliant program is used with a compliant computer, the non-compliant computer or program will "infect" the compliant one and neither will remain compliant. Many companies and government ministries are now making sure that their suppliers and others that they will be communicating with are also compliant, and they are discontinuing their business with companies that are not.

Trying to correct these problems has been and continues to be a very costly and very time consuming endeavor. Many companies have started working on the problem too late and will not be finished on time. Many others have not begun to address the issue or begun to bring their computers up to compliance.

Because international society is completely integrated and companies are so dependant on each other, in order to continue to function smoothly, apparently most or all companies and utilities would need to be Y2K compliant—but that is not the case and will not be the case by January 1, 2000 according to many experts. Numerous countries are thought to be almost totally unprepared.

### **When to Begin to Prepare?**

Many experts recommend that you begin NOW to:

- \* Inform yourself of the issue
- \* Consider your own response and plan of action
- \* Consider your personal situation, family, business, church, ministry, mission/missionaries in your planning
- \* Prepare for more than yourself in order to be a potential refuge and share with others in need

\* Prepare spiritually, emotionally, physically, materially, relationally, financially, etc.

Many feel that because of the potential increase in panic in the coming months as the news increasingly gets out, especially those months immediately preceding January 1, 2000, many survival items in demand will no longer be available after mid '99 and that many of these items will have inflated prices due to the increasing demand. For example, many freeze-dried food and survival supply stores are apparently already having 6 month waiting lists because they're out of stock. Therefore, you will want to begin making preparations now. Also, apparently many banks may run out of cash for the same reasons even months before January 1 (or the governments may require that the banks take a long "holiday" to prevent bank runs), so you will want to take care of the bulk of your financial situations and investments around mid '99 as much as possible as well. It will be easier on your finances and also on the economy if people begin to prepare gradually rather than in a mad rush at the end.

### **A Biblical Perspective**

As you read this and hear more about Y2K as January 1, 2000 quickly approaches, it is easy to become overwhelmed and fearful. My desire is not to stir up panic, yet I realize that anyone facing these issues realistically after seriously researching the situation will undoubtedly experience bouts of fear at certain points in the process. Personally, I think this is probably necessary and healthy. However, the key issue is that we move past the fear as soon as possible and become established in a biblical and God-centered response through which God can be glorified, realizing that He is with us

to the end, and that He and His promises remain trustworthy. He remains the same and in control no matter what happens on this planet and in our lives. We need to remind ourselves of some very important biblical principles and His promises so that we as believers will not become a part of the problem by adding to the growing panic. Instead, we need to be beacons of peace and light and hold up hope for those who are seeing the potential loss of all they have put their security in, and who are being overwhelmed by the magnitude of the possibilities which exist should the Bug bite hard.

As believers, we can be comforted, encouraged and strengthened as we meditate on and put our faith and hope in the promises of God as we seek God's direction for us as we prepare to respond as God would have us respond to the Y2K dilemma. I often think of Joseph and how God prepared him to be one to bring food to starving peoples in a time of national disaster, and how God did miracles to create food when it was needed. I think of God providing food and water to the Israelites in the desert, and God providing loaves and fishes to the multitudes as well as providing a continuous flow of oil for the widow who hosted Elisha. We can take comfort and courage from the fact that our all-powerful God is our Deliverer, Saviour, Refuge, our Immanuel who never leaves or forsakes us, our Hope, our Prince of Peace, our Wonderful Counsellor, our Rock that does not change, and that His Kingdom cannot be shaken even though everything else shakes. We can take courage from the fact that His promises remain true whether we are in times of plenty or disaster. He has never promised to spare us from difficulty, but He has promised to be with us through it and to fulfill His purposes for us as we trust in Him. God is in control and

His ways are higher than ours. He is not scratching His head wondering what to do because He didn't see this coming.

Many of you have probably noticed that God seems to have been urging us to increase our dependence

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are now.*

on Him in the past few years. Perhaps, this is one of many reasons why He has been preparing us in these ways? He has been teaching us to walk by faith and not by sight; to listen to Him and to be led by the Spirit. Before long, our very lives may be dependant on this even more than they are now.

### **How Should we Respond?**

(1) Do not fear or panic. Confess your fears to God and begin to meditate on the promises of God's Word and who He is—KNOW what the Word says about God's dealings with His people during times of disaster—and be encouraged.

(2) Be a steward of the time you have left to prepare and of all that God has given you. Simplify your lifestyle and be content with what you have.

(3) Be led by the Spirit as you seek His direction in how He wants you to prepare.

(4) Share what God has given you now and prepare to share with those in need later.

(5) Connect with other believers in your church and neighborhood now to begin to build a support network, and to think through an appropriate approach for your church/neighborhood, etc.

(6) Re-focus and re-prioritize your life according to biblical principles and realize Who your Source is.

(7) Make sure your relationship with God and others are current and reconciliation is made, "as much as is possible, be at peace with all men".

(8) Pray, research the issue, pray. Develop a plan of action and deadlines as to when you hope to have your plan of action ready and then a deadline when you hope to have your preparations ready

As Michael Hyatt says, Christians have a responsibility to TRUST, REPENT, PREPARE and SHARE for the sake of the Kingdom. See <<http://www.michaelhyatt.com/christians.htm>>

Undoubtedly, there are many questions that will come up in addition to the following, but hopefully these will help to provide some kind of framework to help your church/mission think through some of these issues to help you come up with a response and to help you to prepare.

The first step I would recommend is to have a meeting of your staff on the home front as soon as possible, to pray together and discuss how you will plan and respond to the Y2K dilemma, and how/when you will communicate your recommendations to your missionaries. Choose a team to work on the project and who will regularly update you on their progress. Set a deadline for when you would like to have a plan of action in place, and then set a deadline for when you would like to have most of your plans implemented.

## What if it's a Major Disruption?

The following concerns are not necessarily in an order of priority.

(1) How will missions/churches get finances to their missionaries if the banks aren't functioning and if communication systems and transportation are down?

(2) What will your approach be? How should missions/churches let their home staff/missionaries know about Y2K, since many have likely not heard about it yet if they are in a less developed country. Also, how soon should they be told?

(3) Where can missions/missionaries get resources they need to help them (and the sending churches of the missionaries) to think through the issues and prepare?

(4) Should missionaries be encouraged to remain on the field or return home? Why or why not? How will these decisions affect the future ministry of the Gospel in that country?

(5) How will missions communicate with their people in this event (if they can)?

(6) What preparations should missions and churches encourage their missionaries to make?

(7) What preparations should the sending bases, administrative missions offices make?

(8) How might this affect the future of the mission?

(9) How might it affect the home office/administrative staff?

(10) How might this affect the financial decisions of the mission in the coming year?

(11) How might this affect the plans/program/focus of the coming year?

(12) Will the missionary, team, mission or sending church (or all of the above) decide how the missionary is to respond?

## Responses of Mission Agencies

(i) YWAM. According to Bob Hall, "Loren Cunningham encourages the YWAM Global Leadership Team (a) to work through the implications for YWAM as an organization and prepare; but also (b) to start thinking about the evangelistic opportunities that this situation might present"

(ii) Urbana. Urbana has been postponed for another year partially due to the potential implications of the Y2K problem.

(iii) Neal Piroló's (author of *Serving as Senders*) response says that their ministry is preparing for a major disruption to the world economy. He says he has one Scripture telling him what to do about mission mobilization: "OCCUPY UNTIL I COME!" They are listing their ACTS 29 Training Course dates for the year 2000. See <brigada-orgs-missionmobilizers>

(iv) According to the "700 Club," Drs. Mark & Betsy Neuenschwander of The AD2000 Movement's Crisis Relief Task Force are putting together a training package for pastors, etc., on how to prepare for Y2K.

## Recommended Steps

\* Pray and continue to pray throughout the process.

\* Choose a deadline for your targeted date of having a contingency plan in place (the sooner the better).

\* Research the Y2K issue and determine your approach.

\* Find out what other missions are doing and take counsel from them.

\* Choose a deadline for your targeted date of having a contingency plan implemented.

\* Meet with your home staff and let them know your response, and then let your missionaries and supporting churches know.

Checklist of practical strategies taken from Grant Jeffrey's *The Millennium Meltdown* (229,230). (Regarding

Frontier Research Publications.)

(1) Complete an inventory of the equipment you use in your office.

(2) In 1999 send a letter of inquiry to each manufacturer asking if they will guarantee (in writing—my addition) that the equipment in question will operate normally on January 1, 2000.

(3) Check with key suppliers to verify their products and operations are compliant.

(4) Check for Y2K compliance before purchasing any additional computers or equipment.

(5) Write to your bank and request a written response as to their Y2K compliance. If you remain in doubt about your bank's compliance, consider setting up a second business bank account with another bank in your community that is Y2K compliant. (My note: it might also be helpful to check the Y2K compliance of the banks that your missionaries are receiving their income from where they are overseas, and they might need to switch banks as well to find a Y2K compliant one.)

(6) Verify that all of your communications systems are compliant, especially your voice mail, fax, modems, email and phone system.

(7) Complete an inventory of all computers used in your operations and verify that they are Y2K compliant. If not, repair or replace non-compliant hardware. Be very careful of testing your computer's Y2K compliancy by setting the system clock to January 1, 2000. Some commercial software has a time limit of a certain number of years under your software license agreement. In some cases, resetting the computer's system clock to 2000 may cause the application to conclude that the license has expired (check with your network supervisor).

(8) Complete an inventory of all computer software applications including your computer's operating

system to verify that the essential programs are Y2K compliant. Replace or upgrade all non-compliant software.

(9) Carefully check for any customized software, such as spreadsheets, databases, etc., that may be non-compliant due to the nearly universal practice of recording dates using only two digits.

(10) Write to the utility companies that supply your electrical power, water, sewage, etc., and ask for a written response confirming their readiness to function reliably in the year 2000. Some utility consultants suggest it might be prudent to disconnect your equipment from the power outlets over the New Year's Eve weekend to avoid any possible dangers from power interruption or surges.

(11) Consider the purchase of a high-quality surge protector to protect your equipment from surges and spikes in the electrical power due to Y2K problems. Power-interruption equipment can protect your computers against damage to data from unexpected power shortages that are possible the year 2000.

(12) Check with the management of your office building as to their Y2K preparations to make certain that the building's computerized security system and other critical systems are Y2K compliant.

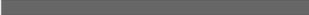
(13) Create a backup copy of every important computer record and program in your organization and keep it on removable media (such as a JAZ or ZIP drive cartridge). If your computer should crash or hopelessly corrupt your data files, a clean backup copy will be essential. (My note: you may also wish to keep hard copies of some of your most essential documents and records; i.e., mailing lists.)

(14) Avoid any unnecessary business travel by plane or train in the first few weeks of 2000.

(15) Advise your accounting staff to carefully scrutinize all invoices and

statements in 1999 and 2000, especially if a date appears as "00." Look for gross errors, such as statements that claim you owe ninety-nine years of interest charges or penalties on a past-due bill.

(16) Be especially vigilant with your accountants regarding personal and corporate income tax filings and refunds in 2000.

  
*Should missionaries stay on the field? While many families and churches may be tempted to bring their missionaries home, we must consider the bigger picture and the longer term effects that this could have on the receptivity of the Gospel of peoples that are being reached. I would strongly recommend that workers be encouraged to remain on the field.*

(17) Obtain hard-copy records of all important financial records, such as financial statements from your bank, insurance payments, pension records, tax payments, utility bills, etc.

(18) In late 1999 consider acquir-

ing a current copy of your personal and corporate credit reports from the major credit reporting agencies to make certain that Y2K accounting errors will not produce inaccurate negative credit reports. (For a sample Letter of Y2K Inquiry, see The Millennium Meltdown.)

## Additional Recommendations

\* It would also be wise to keep important documents in a safe in your office rather than in a safety deposit box at a bank since you may not be able to access a safe deposit box after January 1 for some time.

\* You will also need to figure out how much additional money your mission should keep on hand, and when to take it out of the bank before the masses begin to remove their money from the banks—some estimate that mid-99 might be helpful to begin keeping out extra finances.

\* Insure that in-house email systems (if applicable) and computer networks are Y2K compliant. I understand that a good solution is to have a BIOS Y2K compliance chip installed into your computer. You will want to do this sooner rather than later, because the longer you wait, the less computer consultants/programmers will have the time to work on your computer and their rates will undoubtedly go up.

\* Find out whether your email server is Y2K compliant.

\* Keep a hard copy inventory of your assets for insurance purposes should that become necessary.

\* Take an inventory of your use of electricity and water, etc. Also consider which equipment, in addition to your computers, may have embedded microchips.

\* Don't make computer or other big purchases before Y2K unless the make is Y2K compliant.

\* Consider what supplies need to be stocked so you have enough until things are functioning normally again. For example, paper will likely be increasing in demand if computers are not functioning for a time.

\* Consider how far your staff need to travel to get to/from work. Transportation will likely be affected, so this must be considered in your planning. Can they walk or bike to work?

\* Encourage the sending churches to send their missionaries a copy of The Millennium Meltdown as soon as possible so they can begin to make their own preparations.

\* Think about how Y2K might affect the future of your mission. You might want to re-think your priorities for 1999 and re-think some potential year 2000 scenarios: how will your ministry continue if there are several months, for example, of major disruptions? You might want to re-prioritize your 1999 spending. What will you do if the electricity and other utilities fail? Something to think about.

\* You might want to utilize the internet, web sites and email as much as possible before January 1, 2000 to help extend the Kingdom through this means while we are able to access this.

## Staff and Missionary Concerns

Q. 1. How will missions/churches get finances to their missionaries if the banks aren't functioning and if communication systems and transportation are down? Also, how much should they be sent beforehand, and when?

A. As you answer these questions in your situation, remember that for a period of time it may be difficult to transfer money through normal channels. Rather than try to make special provision to do this, it might be advisable to encourage workers to begin to lay aside cash and equivalents to tide

them over for some time. How much to lay aside would need to be assessed by them/their team, etc. It might also be helpful for your missionaries if you act as an advocate for them, with their permission, by writing a letter to their supporters to let them know of the coming Y2K scenario and the desire of the missionary to try to lay aside some extra for themselves and others so that they may continue their

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ministry where they are after January 1, 2000.

It may be helpful, before you do this, to also ask your missionaries whether they would like for you to also let their supporters (or at least sending churches) know of the Y2K situation and potential implications and some resources that they can access to prepare, and to help them think through issues and potential implications concerning their missionaries—for example, purchasing a copy of The Millennium Meltdown.

Q.2. What will your approach be? How should missions/churches let their home staff/missionaries know about Y2K, since many have likely not heard about it yet if they are in a less developed country. Also, how soon should they be told?

A. I would recommend that you would notify your people as soon as your mission has a plan of action in

place. You will need to decide on the approach, etc.

Q.3. Where can missions/missionaries get resources they need to help them (and the sending churches of the missionaries) to think through the issues and prepare?

A. Resources are listed at the end of this article.

Q.4. Should missionaries be encouraged to remain on the field or return home? Why or why not? How will these decisions affect the future ministry of the Gospel in that country?

A. While many families and churches may be tempted to bring their missionaries home before January 1, it is helpful to consider the bigger picture and the longer term effect that this could potentially have on the receptivity of the Gospel of people that are being reached. For one thing, it could have irreparable effects on the ongoing ministry hoped for in the regions where the missionaries are currently located. I would strongly recommend that while there may be reasonable exceptions to this, that workers be encouraged to remain on the field. One exception might be for people that have been on the field for less than a year, who are still struggling greatly with the language and culture shock, and who may not be able to manage too much additional stress at that time. It is also good to consider that in some cases, depending on the country they're in, workers may even have it better out there than they would at home if the country is not as dependant on electricity and computers as is their home country.

Q.5. How will missions communicate with their people in this event (if they can)?

A. This is of course a major issue, although it wasn't that many years ago that we were not used to the quick/efficient communications that we now have with faxes and email. Then, however, we could usually

make a phone call in an emergency. This may not be the case now. We could also use "snail mail" before; but that may not be functioning for awhile either. While communications may be interrupted for a time, it is possible that missionaries and support systems back home may not be able to communicate for even lengthy periods of time. Some country's postal systems may be working. Others may not be, so you might want to think of some other options to help to deal with this situation as best you can. For example, it would be good for your workers to make sure, before Y2K happens, that they know where the believers live that are within walking or biking distance from them so they have a support system where they are. Hopefully they can then work together in making preparations for themselves and their neighbors. Also, if your missionary hasn't been home for a furlough in awhile, you might want to consider bringing them home early enough in '99 so that they can spend time with their support systems, and then return to their assignment in enough time to prepare before Y2K and to be there when it happens.

Q.6. How might Y2K affect the home office/administrative staff?

A. With the potential implications of a coming Y2K scenario, the possibility exists that finances could become a problem for most people for an indefinite period of time. Missionaries that are already living on raised support will need to include this in their prayers and planning as well as into their discussions with their supportive network.

## Personal Preparations

(For details see "Financial Strategies" and "Practical and Spiritual Strategies" in *The Millennium Melt-down* (189-226))

Main areas of personal readiness

to consider. (Keep in mind that, for many people, this will be happening in the dead of winter.)

\* **Spiritual Preparation.** Priority—encourage them with what the Scripture says and what God's promises are; encourage them to depend more fully on their Source

\* **Location**

\* **Personal Records:** have them (or their power of attorney). Keep a hard copy of all of their personal records in

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a safe place—not in a safety deposit box in a bank, which they may not be able to access at that time.

\* **Educational Records:** have them. Keep a hard copy of the transcripts of their academic records and degrees.

\* **Medical Records**

\* **Medical Emergencies.** If they or their family have serious medical ailments or require prescriptions, it would be wise to discuss this with their doctor and pharmacist and to begin to acquire additional prescriptions before January 1, 2000 so that

they don't run out (about a 4-month supply). If they wear glasses or have contacts, they may wish to keep another pair of glasses on hand. They might also wish to take a CPR course and keep a First Aid Kit handy. They might also wish to get dental attention now if big jobs are on the horizon.

\* **Food Supplies**

\* **Water Supplies**

\* **Emergency Tools**

\* **Heating and Light**

\* **Sanitation/Garbage Disposal**

\* **Hygiene**

\* **Electrical Power**

\* **Communications**

\* **Transportation**

\* **Bartering**

\* **Financial Matters**

## Additional Concerns

Encourage mission personnel to do the following:

\* **Make their own home offices/overseas ministries Y2K compliant**

\* **Make hard copies of important papers and keep them in a safe place, in a strong box, etc.**

\* **Make backups of all their computer files/software**

\* **Make hard copies of mailing lists and other important records (financial, etc.) from their computer, which may not be accessible later on**

\* **Make sure passports and visas are updated and will get them through a longer period of time if necessary**

\* **Gather Christian materials and Bibles to distribute later as needed**

\* **Begin to collect things like scrub boards, etc., and other items which will help them to do things that need to be done that don't require electricity.**

\* **Consider getting a solar powered cassette player (or other items from Galcom. See <<http://www.galcomintl.com>>, <[Galcom@galcom.org](mailto:Galcom@galcom.org)> in order to play praise/worship tapes or play**

messages, etc., if electricity fails. Usual forms of entertainment may not be functioning.

- \* Purchase acoustic instruments so they can continue to sing/make music and have some entertainment as well

- \* Develop personal relationships—they will become even more important in this type of scenario

- \* Help those that are important to them to understand the issue and where they can get the resources for their own preparations

- \* Stock extra to share with others

- \* Make sure relationships are good

- \* Consider options in case of potential temporary unemployment - how far are they from their ministry or tentmaking job, for example? Can they walk or drive bike to work? Will the office be functional after January 1? Are there some other gifts or skills that they have that they may be able to trade or use to barter with after January 1 in order to help with provisions?

- \* Plan spending

- \* Encourage them not to arrange flights for the last few weeks before January 1, 2000 or the first few weeks after January 1, 2000.

- \* Rethink priorities

- \* Keep out extra cash before January 1, 2000

- \* Have them get a hard copy of the most recent printout of their Frequent Flier Miles or keep a copy of their last plane tickets which haven't made it onto their newest statements

- \* Don't make computer or other big purchases before Y2K unless the make is Y2K compliant, etc.

## In Summary

Y2K poses a potential major disruption in our lives after January 1, 2000. The result is that we as missions, as stewards of what God has entrusted to us, need to evaluate,

with prayer and godly counsel, the potential scenarios in accordance with the research that is available.

We need to prepare our missions and missionaries for what may lie ahead so that we can indeed continue to move forward, with faith and action, with God's Great Commission heart, toward what could potentially be the Church's finest hour! More importantly, it is a time where we as His children can re-focus and re-prioritize our lives in accordance with His will and purposes to find our greatest delight in Him!

One major thing to remember about the whole Y2K situation is that everything about it is uncertain. That's what makes it difficult and often frustrating to deal with in terms of coming up with a helpful response. However, if we keep firmly fixed on the Lord and on His Kingdom, and follow His biblical principles as we live out our daily lives, walking by faith and in step with His Spirit, we can be assured that He will accomplish His will in and through us, even if they may look very different from what we have thought it might.

God is in control and will bring glory to Himself through this situation. Let's cooperate with Him and with each other in eager expectation of the things to come as He brings us ever closer to being with Him forever!

## Additional Resources

For more info and resources on all of the above, including preparation checklists, survival supply options, many articles from the secular and Christian perspective, and specific preparation outlines and Y2K compliance options, as well as some detailed info on how to develop a community approach as churches, etc., please check out web site: <<http://www.webcross.com/y2k>>

I especially recommend Grant R. Jeffrey's well written and well-

informed book *The Millennium Melt-down—Year 2000 Computer Crisis* that includes basically everything you need to know about Y2K, and how to prepare personally and prepare family, your business and ministry. In my opinion it is a balanced Christian perspective and includes excellent resources and factual information from government and industry Y2K officials. This book can be purchased from any Christian bookstore or ordered from Frontier Research Publications, Inc., PO Box 129, Station "U", Toronto, ONT, M8Z 5M4 Canada. (Cost: \$15.95 CDN) Copyright 1998 For FREE info kit re Y2K and preparedness tips, call 1-800-87READY

Photo here  
of  
Grace  
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# Understanding Y2K: A Programmer's Assessment

*As a computer programmer, I'm frustrated by all the news stories going around about Y2K. I'll admit that it's a bit too late to contribute to technical solutions to the problem, but I can at least offer some more detailed background information to people wanting to understand the problem. I can also give you a basis for evaluating the various predictions about the consequences of the problem.*

by Michael Goodfellow

I have been reading a lot of news stories about the Year 2000 computer problem (also known as Y2K). As a computer programmer, I'm frustrated by these stories since at best they lack detail, and at worst they are downright misleading. You may find this information useful for evaluating a Y2K project at your company, institution or organization. If you are a business owner or leader in your organization who has not started a Y2K project, this article may encourage you to start one as soon as possible.

## The Y2K Problem

In the beginning computers were small. Instead of the megabytes that a modern desktop computer has, computers that took up a room had memories of a few kilobytes. So when financial programs were first written, programmers kept the data as small as possible. And if you could represent 1970, which takes 4 digits, as "70," which takes two, that was a major savings; especially when multiplied by thousands of records in a banking system.

A few years ago, when people first started talking seriously about this (I remember kidding with my father about it back in the 70's), most programmers thought the problem was a minor nuisance. From a technical point of view the problem was com-

pletely understood decades ago, but until recently, no one really appreciated the number of systems it would affect (even 10 years ago, there were a lot fewer computers in the world). In particular, the problem of embedded systems was not discussed.

Embedded systems include the chips buried inside your appliances as well as inside things like power plants, refineries, the phone system, etc. In the last couple of decades, embedded systems have become very cheap, and this has made them pervasive. Just looking around me now, I know there are computers in my phone, fax machine, VCR, TV, CD player, camcorder, microwave oven, thermostat, and car. It has been years since I shopped anywhere that did not use a computerized cash register or inventory system.

Since the Y2K problem was never really addressed by the software industry, it has spread widely, along with the use of computers generally. As companies have embarked on projects to fix Y2K, estimates of costs have gone up repeatedly. The consequences of failure to fix the bug (including massive legal bills) are now very apparent. So much so that serious people (including programmers) are worried about a complete collapse of the world economy. Some people are predicting mass starvation in the

United States due to failures in the utilities. On the other hand, many experts appear on TV declaring that the problem is minor, that fixes are well under way, etc. The US government gives its major departments grades, ranging from A's to F's, but then reassures people that everything will be OK. Faced with such a wide range of predictions, from "you'll never notice it" to "head for the hills," what should you believe?

## You Will Definitely Notice Y2K

Some people will tell you that Y2K is a silly little problem hyped to the max by consultants who stand to make money off of it, religious doom-sayers looking for a secular reason to predict the end of the world in 2000, and sensationalistic TV reporting.

But as they say, "just because you're paranoid, doesn't mean someone isn't out to get you." People with no money to make and no axe to grind have agreed that this is a serious problem. Some reality checks for the optimists:

\* Big companies, including big banks, are spending millions of dollars to fix this problem. The optimists must assume that all of these companies are run by idiots who can be talked into anything by their computer staffs. They must also assume

that the hundreds of programmers working on these projects are all either oblivious as well, or are in on the biggest practical joke in history (and can keep a secret). This is not reasonable.

\* Some will say that nothing will happen because everything will be fixed. However, even if big companies are solving a real problem, where does that leave smaller companies that don't have the budget to solve it? Despite the attention given to the Fortune 500, the economy is mostly made up of small and medium sized companies. Not only do they employ most of the workforce, but they are also critical suppliers to the big guys.

\* Year 2000 problems have already been detected in many businesses that deal with long-range dates (life insurance, mortgages, etc.) as well as shorter-range items like credit cards. Until just recently, most credit card companies were not issuing cards that expired in 2000, because point-of-sale machines would not take them. One retail store sued the manufacturer of its cash registers over this problem. As we approach the end of 1999, more and more companies will be dealing with things like delivery dates that extend into 2000, and will have problems.

\* The web sites of many software companies (including Microsoft) explicitly list versions of their software that will not handle dates in 2000. Users of this software must at least upgrade to newer versions. Since most people simply haven't done this, businesses everywhere are going to be affected. In many cases, new versions aren't available yet. Non-US companies must wait for foreign-language versions of US software.

\* Many embedded systems simply cannot be fixed. This may sound incredible, but consider your VCR. The 7-day programming feature relies on the date (and day of the week)

being correct. On an older VCR, it will not be right on January 1, 2000. For your VCR, this is a minor problem.

But say you wanted to fix it. You would have to: (1) take apart the VCR to find the chip that controls the 7-day programming; (2) use a soldering iron to remove the chip from the circuit board (some are in sockets), (3) find a replacement chip. If the technology is too old, they aren't making chips in that format anymore, so a new one would have to be designed, (4) solder the new chip back onto the board, making sure you are neat enough not to break anything around it and (5) put the VCR back together and test it. This is the kind of thing that would have to be done to fix each of the millions of embedded systems estimated to have some kind of problem. Even if chips were readily available, this could cost more in labor than the device is worth. If the chips were not available, it would take months at minimum (more like a year) to get new ones.

But there's no time to do that now even for vitally important machinery. If there's no replacement for the unit (because the manufacturer is out of business, or the device is some quirky military hardware that no one else uses), you are stuck with a bad unit. As we'll see below, that's not the end of the story, but you certainly have a problem. If this causes power or phones to go out, it's everyone's problem.

\* Globalization of trade and conversion to just-in-time manufacturing have made big companies more vulnerable to disruptions. A multinational like GM has literally thousands of suppliers scattered all over the world. To build cars, they need their US and foreign operations working. Needless to say, they need power, phones, banks, and shipping in all these countries to work. They also need their customers employed and

optimistic enough to buy cars. If GM can't make cars for awhile, it's not the end of the world for people generally (although GM employees are hard hit), but it will be noticed. Especially if many major companies all over the world are in the same situation, all at the same time.

\* Panic before 2000, and legal action afterwards, can turn even a minor problem into a major one. Many people on the net believe this is why governments generally are making reassuring statements.

## Not the End of the World

On the other hand, the doomsday predictions (planes falling out of the sky, reactors blowing up, permanent blackouts followed by starvation) are also not reasonable. Some points to consider:

\* Power could very well go out, even all over the US. This does not mean it can't be restarted. Many plants have cold-start capability, and can bring the grid back up. If computer problems prevent load sharing on the grid, you might see plants come up and serve only their local customers. Restoring at least some power could take days, but not weeks. Some areas might be blacked out longer, but no power company is going to let a major city sit in the dark any longer than it has to. The people who work at the power plant are not going to run around and panic when the lights go off. They are going to do their best to fix it.

\* Some have said that even if power is back up for awhile, the plants will rapidly run out of fuel, since railroads will be out due to lack of computerized controls. I would point out that a lot of power in the US is hydroelectric and nuclear. These don't need steady deliveries of fuel. In any case, if the power is up, I'm sure the railroads can get necessities deliv-

ered given a few weeks to work on the problem. Again, I expect the people involved to burn the midnight oil fixing things, including putting together whole new systems, if necessary.

\* The same is true of phones. International service could be affected severely, but it is just not reasonable to assume that given power and some time to work, the phone companies cannot get some kind of local service running.

\* Boeing has checked its planes and found only a couple of problems, on older aircraft. None of the problems would cause a plane to fall out of the sky. If things go dark on New Years, you may have problems finding an airport that isn't stacked up with planes waiting to land; or you might not be allowed to take off, but the plane will not fall out of the sky.

We're still talking about a major worldwide depression here, but that's not the same as starving to death in the dark.

## What Will Happen?

Between these two extremes, there is obviously a lot of territory. But to evaluate the news stories and official pronouncements, you really need to know about the Y2K problem in more detail. It's just not enough to say things like, "the Y2K problem affects computers, my car has a computer chip, so then my car has a problem." So before you get all worked up over Y2K, read the rest of this article and try to learn some details. If you can master the material I'm presenting here, I guarantee you that you will be as well informed as some people you see posing as Y2K "experts."

One thing you may be looking for is a list of which industries, countries, etc., will be hardest hit. There's no way I, or anyone else, can give you that list. For one thing, companies are not releasing even the little information they have. They are afraid that if

they admit a big problem, their stock will crash. If they say the problem is small, and later have a bigger problem than they said, they will be sued for misleading investors. The simplest solution is to put out a generally reassuring statement which has a para-

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*If you can master the material I'm presenting here, I guarantee you that you will be as well informed as some people you see posing as Y2K "experts."*

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graph near the end saying that there's no way of knowing what shape their suppliers are in, and so no way to really predict future company performance. Governments have some information on their own internal readiness, but have no incentive to release it. The news is generally bad, and releasing it would just cause panic. Since they don't have to worry about shareholder lawsuits, they can just say nothing.

In any case, if I did put in a list of which industries were in trouble, it would be out of date by the time you read this. Instead, I'll describe the kind of factors you should take into account when making an evaluation on your own. You can read news reports, and look around at your own company, community, etc., and make up your own mind.

To begin with, I'll write a short section on "What will fail?" This is meant to be reassuring, but is necessarily vague. I can tell you what kinds of programs are not affected by Y2K,

but other than some obvious things, there's no way for you to tell if a program has a problem or not. Still, you should be aware that the problem is not universal.

Then, I'll write about the systems that will fail. There are lots of ways to categorize the world of computers, based on what your role is in all this, and what you want to know. I'll break things down three different ways, based on attempts to answer the question, "Who is going to fix this?"; "What can be fixed?" and "How will this affect me when it fails?" Finally, I'll give you my best case and worst case scenarios and talk about events that would determine which it will be.

Before I get started on details, one general reminder: Although lots of systems will fail at midnight on 12/31/99, many other computer systems use Universal Time (Greenwich Mean Time) internally. This means they may fail at 7:00 PM Eastern Time, not midnight.

## What Will Fail?

It's not like every computer in the world is broken. Lots of computers don't use dates at all. They are not affected. This includes lots of embedded systems. For example, take a CD player. There's no way to set the date on one, and it will be unaffected by Y2K.

This is a rule you can use. Especially with an appliance, if you can't set the date, then it's not going to crash. If you've never set the date, and it works fine anyway (like a VCR that you don't use the timer feature on), then you also have no problem. It's estimated that over 90% of embedded systems are the same way. That still leaves a lot of things to go wrong, but it's also good news. You can stop worrying about the microwave oven, the car, the phone, etc.

Even when you can set the date on a device, it doesn't mean it is used

for anything important. It might just be for writing the date on a log (think of a FAX machine that stamps each page with the date.) In one audit of power plant equipment, many devices were found with random dates. The date had never been set when they were first installed, and they had worked normally without anyone noticing.

Other devices will fail, but in fairly trivial ways. An old VCR will get the day of the week wrong. Even fancier systems will make the same kind of mistake. A building heating system might run when it's not supposed to, because the computer is indicating a weekday when it's actually a weekend. There was a news report about a city that found that its traffic lights would use the weekday pattern instead of the weekend pattern. All of these systems will be described as not ready for 2000, but it's hardly a major problem.

If you really want your VCR or other device to get the day of the week right, there's a simple fix. Just set the year to 1972. That year started on the same day of the week as 2000, and is also a leap year. So the year will display incorrectly, but everything else will work fine. The city with the stoplight problem is doing exactly this. Some systems will not handle 1972 though, because it is too early (more discussion later.) For these, you might have to set the date to 1994, which at least starts on the right day, and then change it on March 1, to 1995 after the leap year.

Some programs use dates extensively, like financial packages, and are almost certain to have problems unless they have been fixed. If nothing else, I expect 2000 to be the year of the bad bill. People will get billed ridiculous amounts, not billed at all, refunded ridiculous amounts. Payments will not be credited to accounts, etc. There are just too many

small businesses that have not even started to upgrade their systems.

### Who is Going to Fix the Problem?

To answer this question, consider who owns the computer and what amount of support it has. That produces the following categories:

1. *Systems with full-time support people.* This includes the big mainframe computers, which live in their own air-conditioned rooms and have staffs of programmers and operations people in constant attendance. Some of the software on that computer was written by the company

*Other than these obvious categories (things without dates, things with lots of dates), there's no way to tell what will fail. That's the most frustrating aspect of this whole mess.*

that owns it. That support staff will have to fix the computer, either by rewriting parts of the software, or installing new versions. This category also includes networks of PC's, as long as the company has a support staff. They will be responsible for upgrading all the PC's owned by the company.

2. *Desktop systems, at work or at home.* If you bought it, or installed software on it, it's going to be your job to fix it. This is true even if the computer is owned by your employer. Look around—is there a support staff? Is there money to hire consultants? Are there any consul-

tants worth hiring left by the end of the year? Probably not.

3. *Embedded systems from major manufacturers.* These might be upgraded by replacing a whole circuit board. There might be a new version from the manufacturer. It might even be in stock. It's probably not free. The company that owns the system still has to find it, order the replacement, test the new one when it arrives and of course pay for it. This all sounds simple, but it is amazing what a company can get away with. Years ago, an IBM Customer Engineer (repairman), told me he went to a refinery to do a scheduled upgrade of an embedded system. The company insisted they had no such system. From the paperwork, they found a system number, and from plans, a column number in the plant where the machine was supposedly installed. They went there, and sure enough, a computer was sitting there—covered completely with soot and tar, invisible, and clicking away. The first problem most companies have had with Y2K fixes is figuring out what computers and software they own in the first place, let alone what has to be fixed.

4. *Embedded systems without support.* If the manufacturer is overwhelmed with orders, or never made a replacement model for the unit, or has gone out of business, the system is unfixable. Start looking at workarounds or contingency plans.

People say Y2K is a "computer" problem, but let's be more specific—it's really a *software* problem. Most people (other than TV reporters) know the difference now. Software is the game you install on the computer (hardware) that you bought. If you've never touched a computer, consider the software the CD (or record) and the hardware the record player. With embedded systems, this distinction is a bit thin, since they have all their

software burned onto a special kind of chip, called a ROM (read-only memory), and mounted onto the circuit board along with the computer. Sometimes, the ROM is inside the computer chip, to make things even cheaper. But it's still the software that has to be fixed.

## A Software Problem

So when we ask what can be done, we categorize computers by the software they run.

1. Big companies typically run a mix of software written by the company and software that they've purchased. The company can fix its own software, although sometimes at huge expense. More on this later. As a user of desktop PC's, you may also have written software, in the form of a spreadsheet or word processor macro. If so, you can fix it.

2. Most software is purchased off the shelf. This software may not work, but the owner cannot fix it. For one, under many customer agreements, it's not legal for you to modify it. For another, to change a big piece of software, you need what's called the *source code*. This is the human-readable version of the software. A special computer program called a *compiler* converts this into the *object code* or *executable* version, which is what is sold. Without the source code, you can't change (or fix) the program. There are *decompilers*, (which your customer agreement specifically prohibits) which can convert object code back into source code, but they are nearly worthless for big projects.

The problem is that source code contains (semi-)readable names, and comments on what the program is supposed to do. For example, "balance = balance + deposit" might be part of a program to update your checking account. When this is compiled, the names are thrown away—the computer cannot read and under-

stand them, after all. So when the decompiler converts the object code back to the source, it has to make up names. Being just a program, it has no idea that the code is working with checking accounts. So it just writes something like "a = a + b". All the comments are gone, since they never made it to the object code. The output of a decompiler is many times harder to work with than the original source. The bottom line is that for packaged software, you have to contact the manufacturer for a new version.

3. Finally, there is software in

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*The pessimists are perfectly correct to say that two months of complete blackout in the US would cause starvation. I just don't buy the assumption that power will be out that long.*

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ROM (read-only memory). Think of this as a floppy disk that has been turned into a chip and placed permanently inside the machine. To fix this, you have the same problem as with purchased software—you don't have the rights, and don't have the source code. You also have a new problem, which is that you can't update the code even after you fix it without replacing the ROM chip. If you are lucky, the ROM has a socket, so it's easily removable, and you can make a new one. If you are unlucky, the chip is soldered into the board, and can't be replaced. This is the worst case, but there's a lot of it around. Of course, when I say "you" here, I mean

the manufacturer of the system, but "you" could also be a customer with one of these things, after the manufacturer has told you it's too late, or has gone out of business.

## How Will This Affect Us?

There's a lot of software to fix, and it will certainly not all be fixed in time. So we have to do triage—fix the important systems first, and let the other ones go. Which are the important computers?

1. *Utilities, Phones and Transportation.* The most important utility of all is electrical power. The pessimists are perfectly correct to say that two months of complete blackout in the US would cause starvation—I just don't buy the assumption that power will be out that long. Not far behind is the phone system. All of modern commerce, as well as things like the supply chain for your local supermarket, depend on communications. Banks cannot function without the phone system. Neither can the military. After that, some people place water and sewerage systems—glitches in computers have already caused release of sewage into waterways. On the other hand, some people put transportation next. The railroads are particularly important. Things like coal for power plants, shipments of grain and other produce, etc., are moved by train. I think we could do without passenger planes for a while (I hate to fly), but lots of goods (and mail) are moved around by air. Internationally, the movement of aircraft and containerized cargo ships is vital. There are probably places in the world that will starve without grain imports from the US and elsewhere.

2. *The Military.* Although I think the chances of the US being attacked while vulnerable from Y2K shutdowns are minimal, the military probably considers itself very impor-

tant. If we get to the situation where troops are needed to police cities, they certainly would be nice to have. Coordinating them and getting their supplies to the right place at the right time is certainly easier with software. For example, if a big warehouse were to lose track of its inventory due to computer failures, it might as well be empty. An item would be as hard to find as a single book in a pile of thousands.

**3. Banks** depend on so many other systems working that I have almost no hope that they will all come through this OK. Banks are highly leveraged now, keeping only tiny reserves of cash. A bank needs to fix its own systems, but also depends on the utilities here and internationally, other banks, domestic and international, the industries who are its borrowers, the individuals who are its creditors, and the stock market where it may have placed a lot of its money. Banks are at the intersections of the financial network, and I can't see any scenario that does not hit them hard.

**4. Government Help.** Almost half the population of the US receives a government cheque each month, either from Social Security, welfare programs, farm income supports, etc., or as an employee of some level of government. Governments are big organizations and tend to have just the sort of older mainframe-based systems that are most at risk. Failure to write checks would severely affect ordinary citizens, hospitals and government contractors. By its own rating, the US federal government will not finish Y2K conversion in time. Some states are farther behind. Internationally, Europe is running a little behind the US, and Asia far behind.

**5. Tax Collection.** You may consider inability to collect taxes a blessing, but you'll miss the government services. By most accounts, the IRS computer systems are a mess, and

Y2K work is not helping. The 2000 tax season will be bumpy. There's some worry that cheating the system will run wild. I surely hope not.

Get all of the above running, or at least limping along, and you are down to the level of individual companies/organizations. Some are obviously more important than others, but all are at some amount of risk due to their dependency on suppliers and customers, both domestic and international.

### Foreign Countries

Countries that are more computerized are more at risk. The US is probably worse off, but Europe and Asia are almost as computerized. Some poorer countries will probably never know Y2K has happened.

Countries that have waited the longest to begin Y2K work are more at risk. Again, the ranking is US, Europe, Asia. It's hard to tell if Asia's late start will be balanced by its relatively less automated economy. (Japan though is both very automated and very late.)

Countries that import basic commodities are at risk, especially if the international economy is severely disrupted, and currency values are changing from day to day. The US is very dependent on oil. Japan is dependent on oil and food imports. Russia is importing lots of food, even to the point of needing food aid during the latest financial crisis.

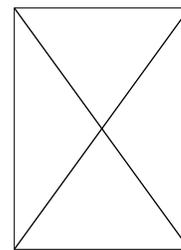
Countries that depend on export revenue will be hurt more by a disruption of trade. Asia has already been hurt badly by the economic turmoil. Russia was hurt by falling prices for oil. Trade disruptions will probably also hurt Latin America in 2000, if financial problems haven't already hit by then.

On the supply side, if the countries that export oil were to have major problems, the whole world

would be affected. The US is both a major customer and a major food exporter to the rest of the world. Japan is a major exporter of electronics and car parts. Failures in these countries will affect industries that rely on their parts.

Within an economy, I've listed the kinds of things that everyone is dependent on—power, phones, water, bulk transport, government. We really don't know how far these networks reach. If a European government system is not running, will that mess up their exports, and then US imports, companies? Will the shock reverberate back and forth, or die down?

*[Editor's note: Goodfellow in his original article explains in greater detail the Y2K problem to show readers various pieces of computer software, interdependencies and contingency factors. The author believes that if we are to get a feel for the Y2K problem we need to understand some of these details. For lack of space we were not able to print them here. However, for those who want to access and receive the details contact the IJFM editor, or Goodfellow's home page at <http://www.best.com/~mgoodfel> or at his email [mgoodfel@best.com](mailto:mgoodfel@best.com)*



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# Reasonable Best and Worst Case Scenarios

*In this article the author addresses the whole area of predicting the Y2K crisis. He gives the reader the social effects of the problem that may eventuate plus a basis for helping us evaluate the best case and worst case scenarios. According to the author, the worst thing you can do is sit around and do nothing, especially if you are a programmer. How are we going to answer people afterwards when they ask what we did to prevent this crisis?*

by Michael Goodfellow

Unfortunately, even if you understood everything about the technical aspects of Y2K, there's no way to make a definite prediction about what will happen in 2000. Until the testing phase gets underway, even companies doing Y2K fixes won't have a definite idea of what will fail. The same goes for government projects. Software projects almost always miss their deadlines. And of course, companies and organizations who have not done anything about Y2K have no idea how badly they will be hit.

Even if you knew the status of every Y2K project, there's no economist who could say definitely how such a massive number of simultaneous failures would affect the economy. Even when things are going smoothly, economic forecasts are notoriously unreliable. The worldwide financial crisis of 1998 proves the point.

So take this article with a grain of salt. Nevertheless, these scenarios represent my best guess, informed by my technical understanding of Y2K and the status of Y2K projects as reported in the press. Some assumptions we can safely make are as follows:

\* Many small and medium-sized businesses will not be ready, since they have not started yet. 50% have responded to surveys that they have no intention of doing any Y2K fixes. Since this is in the US and Europe,

where Y2K awareness is high, expect Asia to be at least as bad. This cannot help but cause supply-chain problems for larger companies.

\* Many departments of the US federal and state governments will not be ready, since they have large systems and have not made sufficient progress by the end of 1998. Worldwide, expect governments to be seriously affected. Tax collection is especially vulnerable. It is date-intensive, run on big mainframe systems with old software, complicated, and tied into companies throughout the economy.

\* Most people who are affected by the bug will not understand it. They won't have a feel for why it happened, what it takes to fix it, or how long it takes to fix.

\* There will be lawsuits over Y2K problems. Fear of lawsuits will continue to cause large companies to avoid disclosing accurate information. Payment of lawsuits will be a major expense as problems develop in 1999 and 2000.

## Social Effects

Up until now, I've written mostly about the technical aspects of Y2K. At least as important are the social aspects. How we react to this problem, both before and after the event, will determine a lot of the outcome.

Some things to consider:

1. **Panic.** Even without a real problem, panic before the event can cause serious damage. There is not enough cash in circulation for everyone to withdraw their money from banks (not to mention that the banks don't have enough assets in reserve.) There is not enough food in grocery stores to allow everyone to stock up a month's supplies. There is not enough gasoline in gas stations for everyone to fill up their car on New Years Eve. Any kind of panic will create shortages, and this will tend to feed the panic. The best way out of this is to not panic in the first place. Some societies will be less prone to panic, and will do better. Some will trust the pronouncements of their governments and experts, and will calm down. Others will have big problems, even before the Y2K bug hits.

2. **Confidence.** Our economy is basically run on the purchase of luxuries, not necessities. Even basic purchases like food, shelter and transportation have a luxury aspect. We buy fancier food (or eat out), a bigger house or a nicer car than we really need to buy. Our jobs and income depend on other people doing this as well. This is a very unstable situation. If confidence drops, people will buy less, cutting out luxuries. This will cause companies to lay off workers,

which tends to further depress confidence. Either before or after Y2K if there is a collapse of confidence, the economy will be badly hurt. This is not hypothetical. Look at Japan, where people are sitting on large savings accounts and refusing to spend, because the outlook for the economy continues to be bad. This is one of the factors that have left them in recession even years after their stock market crashed.

**3. Litigation.** After the Y2K damage is done, lawsuits will start flying. This is how we as a society assign blame. Many people have estimated that the cost of defending companies which are sued, or paying damages, will exceed the cost of the Y2K repairs.

### **A Reasonable Best Case Scenario**

Let's assume there is no panic in 1999. This is not as unreasonable as it sounds to doomsayers. After all, people rebuild their houses in earthquake zones after a quake, or in flood zones after a flood. If they are complacent about known disasters, how can they take unprecedented ones like Y2K seriously? Plus the whole thing is hard to explain exactly, and makes for poor TV. The experts contradict one another, and the doomsayers look a bit wild-eyed. It's easy to file this in the silly category along with stories about asteroids hitting the Earth.

So we go through 1999 this way. Techies, CEOs and government officials are getting more and more nervous, but most of the public is blissfully unaware. Look for insider selling of company stock, especially in the high-tech sector. Lots of conferences and contingency planning. There are some cash withdrawals, some people heading for the countryside, but not enough to matter. Lawyers are sharpening their knives.

Failures start early and increase during the year as programs start working with dates after 2000. Companies and governments have trouble budgeting; ordering from suppliers for dates in 2000 is a problem. Perhaps booking air travel for 2000 becomes a problem. Expect problems around the first of the year, as a large group of programs start to look ahead into 2000. Another group of problems will occur around April, at the start of the new fiscal year.

Big companies are getting rough with their suppliers. Suppliers that can't prove they are Y2K compliant are cut off. Software companies are late with Y2K fixes and cause howls of protest. There are big effects on the stocks of individual companies. The market as a whole is uncertain.

New Year's Eve. Systems start to crash in the evening since 7:00 PM Eastern Standard Time (New York time) is 12:00 Greenwich time. In Asia, there may be a second set of crashes after midnight.

Let's assume the biggest companies have their act together. Power plants and big customers go down here and there across the US, Europe and Asia, but the grid stays up. The phones stay up. Things are probably not this good everywhere in the world. That would just be too much to ask. So assume some Country X loses its power and phones. Since this is a best case scenario, assume it's not a major player in the world economy.

There's probably an industrial accident (or dozens) in places around the world. An embedded system does the wrong thing, and a fire starts at a refinery or something. Still, on TV it looks like we did pretty well. New Year's Day comes along and people crawl out of bed.

Behind the scenes, things are more of a mess. Lots of 24-hour, 7-day companies have seen their systems fail. Non-working cash registers

in stores, bad inventory systems in warehouses, messed up schedulers for shipping and transportation, stalled process control equipment. On Saturday, the 1st, government programmers come in to work to check out systems. Most systems are failing in some way.

From the technical discussions we've gone through, you can imagine what this is like. Some computers were turned off before the holidays. Some refuse to start up (crashes in the operating system software.) Others start fine, but when application programs like accounting or payroll packages are run, they crash. Some programs run, but produce nonsense output. Some programs work fine, except they don't allow the user to enter dates in 2000. There's no time for going back to source code and fixing the bugs. Instead, workarounds are tried. The clocks are set to different dates. Sometimes this works, other times not. In the worst cases, running the programs causes databases to be corrupted (written with bad data). This can mean going back to backup copies of the database, losing transactions already entered that day.

Fixing this will be frustrating. A system will go down. You start it up, it crashes again. You find a problem and start up, but it crashes somewhere else farther down the line. You fix that problem and start again. And so on. Gradually, you get something useful. There is going to be a lot of yelling—"Where's the manual for this thing?!" Customer support lines are swamped, so most people don't get through. Web sites with Y2K information are also slow due to high loads.

Your local retail outlet or supermarket is also in a fix. They have no technical support people, and can't switch back to manual methods (products only have a barcode, not a price tag). Store managers are staring

at manuals and trying to get their systems to run. They don't have Internet connections to use for downloading upgrades. Perhaps, they think to set the dates back on the system. Perhaps that works. They are very upset.

Billing systems are a shambles everywhere. They are either crashed, or spitting out bills for a zillion dollars, or refunds for a zillion, etc. This is when programmers really get expensive. Nearly every company in the industrialized world is screaming "Get my systems back online! I'll pay anything!" Unfortunately, programmers are simply not available at any price.

All software companies are under intense pressure to make fixes available for free, immediately. There's a lot of yelling and finger pointing. Microsoft and the other deep pockets are named in virtually every Y2K lawsuit, as well as in large class-action suits. Court cases play out for years. There are calls for the government to "do something."

Within a few days, production slows at most big companies. Once they have their own systems limping along, they send out SWAT teams of their own programmers to fix supplier systems. Small companies switch to manual systems where possible. Medium sized companies are hardest hit. There are delays and frustration everywhere, but goods do get produced and distributed.

Tech stocks drop rapidly on the stock market, as do the big manufacturers, and some insurance companies. Some companies go bankrupt, and the supply chain is affected even more. The worst effects take months to show up. A medium-sized recession starts due to drops in productivity. Japanese banks blow a few more rivets, but hold. Programmers and lawyers do well financially.

Long-term software companies lose a lot of reputation. People become

even more cynical about the effectiveness of government and big business. Y2K is used as an object lesson when people talk about the dangers of high tech. This is the best case.

### A Reasonable Worst Case Scenario

No one knows what it takes to start a fad or a panic. It might take only a general increase in the amount of talk about Y2K. I think it will take a concrete event that affects (or at least impresses) the average person. Some possibilities:

*Even if you knew the status of every Y2K project, there's no economist who could say definitely how such a massive number of simultaneous failures would affect the economy.*

\* The NRC announces that since safety systems cannot be guaranteed, all nuclear power plants will be shut down in late December, to be re-certified. They announce that black-outs on the 1st are virtually certain, especially in the Northeast, where nuclear plants supply 40% of power. They hope to have the plants back by summer, when the high demand season starts.

\* Or, the airlines announce that due to insurance coverage problems, or FAA decree, all flights are cancelled for the first few days of 2000. Flights will resume when air traffic control systems have been fully tested. Vacationers all over the country are affected.

\* Or, a state governor announces that the since loss of services cannot be ruled out, and communications can't be assured, he's requesting that the National Guard be positioned ahead of time in the major cities of the state to prevent looting.

None of these things produce panic by themselves. They do draw the attention of the public, and the media. All the scare stories get more coverage. Even the optimists are saying there may be problems, and that you should keep some food and cash on hand. When pressed, they can't rule out a disaster.

**Panic Stage I:** The public begins to withdraw serious amounts of cash from banks. Appeals for calm from bankers and regulators don't help. The general feeling is "What else would they say, even if they knew about a problem?"

**Panic Stage II:** Cash is in short supply. You go to the ATM and it's empty. The grocery store can't cash checks or make change. This is because there is only about \$2000 per household of cash in circulation. Most of that is already in everyday use. There's not much room for a big increase in the demand for cash. The Federal Reserve can print more cash, but knows that feeding the demand would only harm banks. So they let cash become scarce. They advise that people pay by check or credit card. Cash businesses (fast food) are hurt badly, and so are the poor (people without bank accounts). These real hardships only make good TV and feed the panic.

**Panic Stage III:** Once lines appear at banks, everyone starts to take this seriously. There are runs on all kinds of commodities. Non-perishable items disappear off grocery shelves. By the end of December, grocery stores are empty, and are mobbed whenever a shipment comes in. In the last week of December gaso-

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line becomes impossible to find. Needless to say, stock markets start crashing around the world. This does not help.

Failures in systems increase throughout 1999. By the end of the year, the media is covering each new problem. TV news magazines are running stories on how the IRS will not be able to function for months, sending the budget deeply into the red. Medicare will not be ready. Hospital administrators are quoted as saying that hospitals will close in that case.

"End of the World" groups are growing much more active, and are being covered by the press, along with survivalists (especially, programmers who are survivalists). In this crisis atmosphere the end of the year arrives.

*New Year's Eve.* Starting in the evening in the US (12:00 Greenwich), power and telecommunications systems start to have problems. Not every embedded system or control program fails, but enough do to shut down a sizeable number of power plants. Once a minimum is reached, the rest of the grid will crash due to inability to handle the load. Eventually, power is out nearly everywhere in the US, Europe and parts of Asia. Some power comes back within a day or so, and there is limited power within each region by the end of the week. Within two weeks, most of the grid is back. Nuclear plants are shut down completely, if not down already. This is a major problem in France (affecting all of Europe) and Japan.

Telephones might take longer. Some equipment has emergency power, but not the offices (and computers) of programmers (not sure this is true). Not until electrical power is partly restored does serious work get started on rebuilding the phone system. Some parts of the network come back quickly, but others require significant workarounds. Complete tele-

phones are much more common in the US. This will add a unique element to the panic, and to the riots. In the next few days, fires are put out and cars are towed off roads to open the cities to supplies. Food stations are set up by the military. Banks and stock markets are closed for weeks. Necessities like coal and grain are moved by government order. Within a couple of weeks, food stores reopen, and some cash comes back into the market. It's immediately clear that a major depression has started, due to the bank runs, the utility and other system failures (which have stopped all commerce in its tracks), and the physical damage. Confidence has collapsed for the moment and must be rebuilt. Morale is terrible and the cleanup goes slowly. As calm is restored and people try to pick up the pieces, systems failures finally get addressed. Compared to my best-case scenario, assume that small and medium-sized businesses which did not address Y2K are hit hard. No amount of tinkering with dates will get their systems back. Programmers are working hard, but a majority of small companies are left waiting. Small businesses have been delayed by utility failures (one to two weeks) and systems failures (perhaps another month or more). They have been without suppliers or customers or bank credit for weeks. Many just close their doors. Supply chain disruptions follow, and major companies suspend operations. Government and most businesses are forced to reduce operations and cut their size drastically. Huge numbers of bankruptcies follow. The economy shrinks rapidly. Government action is required to get banks to reopen. Once money is flowing again, international currency markets can be reopened and new values for currencies established. They will probably swing wildly at

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first. With currency values stable, some international trade can resume. The depression will last for years.

A third party candidate will win the US presidency in 2000. Politically, the losers will be the internationalist, big business Republicans. The computer industry and high-tech in general will be scorned. Politics will be populist, protectionist and anti-technology. Nationalist and Green parties will do well in Europe.

Remember that this is the worst case. Very few people are injured or killed even in this horrible scenario. A lot of wealth is destroyed however.

### Factors that Influence the Outcome

In my opinion, there are three main factors that influence the outcome of the Y2K crisis:

\* **Panic.** Any level of panic that does not cause bank runs can be dealt with. Once there are bank runs, I can't see anything stopping a full-fledged panic. However, it might happen well before the end of 1999, which would give it time to die down.

\* **Power Failures.** Worldwide, this may be no different than other utility failures. However, I think the combination of a power failure and a panic is especially dangerous. In the US, I think it will definitely lead to riots, and then to heavy damage to the cities.

\* **Supply-chain problems.** Y2K failures can snowball. Shutdowns by a few suppliers will cause a big company to stop production, which will affect other suppliers. A little bit of this just leads to a drop in productivity, the same as with a storm or an earthquake. A lot of this leads to bankruptcies and recession.

These three factors could play out differently in different countries. All combinations could occur. A depression started in the US, Europe or Asia

would spread worldwide.

**Minor panic, minor power failures, minor supply problems.** This is my best case scenario. There are still lawsuits, and loss of productivity from dealing with systems failures. A recession begins.

**Minor panic, minor power failures, major supply problems.** If banks collapse in a major country (due to bankruptcies, not Y2K bugs) or if disruptions slow international trade, this could cause a depression.

**Minor panic, major power fail-**

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*The primary effects will be economic, within the range of recession to depression. So much remains to be done, especially worldwide, that I think we can rule out the "bump in the road" scenario.*

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**ures, minor supply problems.** If everyone were warned ahead of time that there would be blackouts, and people did not panic, this might not be much worse than the best-case scenario. Supply problems would be added to and the recession would be deeper.

**Minor panic, major power failures, major supply problems.** The effects are the same as "Minor, minor, major", but with a deeper recession. Power failures without panic are just another supply problem. A serious one though.

**Major panic, minor power failures, minor supply problems.** If we had a panic before the event, but

bank runs were limited by the amount of cash in circulation, it would not be too bad. At midnight New Year's Eve, when power stayed on, everyone would laugh it off and start to celebrate. Cash would rush back into banks after the 1st. Stock markets would still have crashed however.

**Major panic, minor power failures, major supply problems.** A roller coaster—panic, relief, economic disruptions, bankruptcies, recession.

**Major panic, major power failures, minor supply problems.** This would be the same as the worst-case scenario below. Panic plus power failures will cause riots and arson, devastating cities in the US. A serious loss of confidence follows. A depression in the US will spread worldwide.

**Major panic, major power failures, major supply problems.** This is my worst-case scenario. A worldwide depression begins, probably worse than in the 1930's.

### What Should we Do?

As the end of 1999 approaches, businesses and governments can take some preventative measures. Backup copies should be made of any important data before the end of the year. Computers should be shut down over the 1st wherever possible, to avoid crashes during the transition from 1999 to 2000. Even if a business is 24-hour, consider shutting it down and restarting. This will be costly, but will avoid the situation where things are failing right and left, and there isn't enough staff to handle all the emergencies that come up. After the start of the year, systems can be brought up one at a time, as people are available to fix them.

Some people may read all this and think that there's no point in fixing their own systems, since everything will be such a mess anyway. This is wrong. Whenever the economy

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starts to pick up again, you will want these systems to work. The more effort you put in before 2000, the faster your systems will come back.

Since panic is such a big factor in the outcome, steps should be taken to prevent it, or reduce it once it starts. I would advise that you learn about Y2K so you can speak knowledgeably about it. Follow the news so you can give specific examples of things that have been fixed, and things that can go wrong. Don't pass rumors. If you are in a position to manage a Y2K project, follow the recommendations in the section above, "A Strategy for Fixes." In general, start thinking about what you are going to do to calm people down. I don't think a speech will do it. You need something to actually show people (customers, reporters, or your boss.) Setting the clock forwards to 2000 before you have to strikes me as a convincing demonstration that you don't have a problem. Writing speeches and vague press releases strikes me as a waste of time.

Finally, there's the question of stocking up cash, food and supplies. How much of this you should do depends on how bad you expect things to be. If you expect my best-case scenario (a recession), you don't need to do much of anything in the way of stocking up. You might want to shift money out of stocks.

If you expect my worst case (panic followed by worldwide depression), you might want a couple of weeks of food, and some cash. You'd definitely want to be out of the stock market.

Many people commenting on the Internet feel the worst case is a complete collapse of the economy, with all the resulting disasters, including widespread food shortages. Let me point out a few things about this.

\* To believe that people starve, you have to assume that the economy will completely collapse, the govern-

ment will collapse, the military will collapse, and that everyone will just give up.

\* If people do starve in large numbers, it is unlikely that you will survive the chaos that ensues. Stocking up just makes panic-induced shortages worse in the case where things are not going to collapse completely.

\* If food production or distribution stops, stocking up food buys you a few months of survival. When your food runs out, you are unprepared to farm, and it's the wrong time of year anyway. So you starve a little later.

\* If you really think industrial civilization is going to end, the cheapest way to prepare is to book a vacation in India around the 1st. Actually, any place with a lot of subsistence farmers will do. They are not computerized.

Note the worst thing you can do is sit around doing nothing, especially if you are a programmer. How are you going to answer people afterwards when they ask what you did to prevent this?

### Conclusion

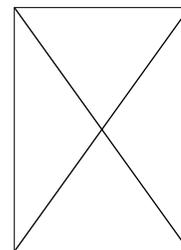
I haven't written any updates to the above document. I mostly wanted to provide background so that people could understand other things they read about Y2K. None of the above background material has changed. For more recent information, you can check out the Senate report, which is linked from my home page at <<http://www.best.com/~mgoodfel>>.

The Senate report was a bit of a milestone, because it concentrates so much status information in one place. Also, since it is from a Senate Committee, it carries more weight with most people.

My bottom line hasn't changed. Y2K cannot be predicted in detail because there's too much information that simply isn't available. And even if it was available, no one understands the world economy well enough to

make a detailed prediction. I still think that the primary effects will be economic, within the range I predicted (recession to depression). So much remains to be done, especially worldwide, that I think we can rule out the "bump in the road" scenario.

At the other extreme, we can rule out the survivalist-style preparation that only makes sense if you think that utility failures will be widespread and long lasting. Although that can't be totally ruled out, what little information is available argues against it. However, if you are going to stockpile, do it now, so that you won't be contributing to panic buying later in the year.



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# The Spiritual Dimension: Isaiah Addresses Y2K

*Y2K threatens hunger, abasement, and worse. It thereby presents what may well be the greatest test of faith that we will ever face. If our response is panic and dread, we have failed the test. Do we believe God is good and as Christian we have His favor in Christ? Do we believe God is in control of every circumstance? God is in charge of Y2K and He will use it for our good.*

by Babel 2000 Group

No, it's not what you think it is. We are not suggesting that the year 2000 computer problem (Y2K) was somehow predicted by the prophet of the Lord in Judah in the late eighth century BC. Nor for that matter are we even generally of that school which finds in current headlines fulfillment of biblical prophecies. Such preoccupations, in our estimation, are not only wrong-headed in terms of biblical interpretation, they also tend to become a major distraction from the task God has left us here to do, namely to be preoccupied with His kingdom business in this world until the Master returns (Lk. 19:13).

However, it does seem that Isaiah addresses Y2K in the following sense: the prophet tells God's people how to live during times of great turmoil. Early in the period in which Isaiah carried out his ministry Judah faced the combined threat of Israel and Syria who united in an unsuccessful effort to eliminate Judah. Later it was Assyria, that super-power neighbor of Israel and Judah, who became the most prominent source of turbulence in those days. As a matter of fact, Israel was conquered by Assyria (722 BC) and taken into exile during this time, and Judah herself barely escaped the same fate. Judah endured the utter devastation of her

countryside by the Assyrians, and Jerusalem endured a harrowing siege.

But the real enemies were not the external military threats that became the focus of Judah's attention. The underlying source of the turmoil they faced were the sins of the people themselves: idolatry, hypocrisy, self-indulgence, greed. Isaiah was sent to expose those sins, call the people to repentance, and announce salvation in time and for eternity for those who trust and obey the Lord.

In the process of delivering his message the prophet expounds some principles that can guide the people of God in any day. His words are particularly fitting for those who live under a threat greater than Assyria: the political and social upheaval which is almost guaranteed by Y2K. We face the prospect of cities "under siege" and an unprecedented devastation of our country if indeed the power goes off, governments fail, the economy implodes, and social chaos results.

So what does Isaiah have to say to those who face the very real likelihood of Y2K-induced turmoil? We will try to cull out the major themes that apply to our question. We want to explore the root problem that God identifies in His people, the response God makes to this problem, and the proper response of the people to God. This will all be directly applicable to

our contemporary situation. Before we examine these particular themes, though, let's look at the overriding message of Isaiah—a theme which provides a foundation for every other lesson we find in the book.

## **God is God, and He is in Charge**

The main message is simply this: God is God, and don't you forget it. "Thus says the LORD, the King of Israel, and his Redeemer, the LORD of hosts: I am the First and I am the Last; besides Me there is no God." (44:6) "To whom then will you liken Me, or to whom shall I be equal? says the Holy One." (41:25) God's people should not need that reminder. But invariably, when they face threats to their welfare, they tend to forget the basics. The most important thing for Judah, as well as for us, is to remember simply that God is in charge. He reigns, and we must keep Him and His ways in all our thinking as we contend with the situations and dangers we face.

When confronted with enemies storming the gate or with the prospect of food stores without food, we tend to forget that God is still God; that He controls even these events, and that our only safe passage through them is to seek His wisdom and direction during the crisis. The greatest threat to

our welfare is not the enemy we face or the circumstances that menace. The greatest danger is that we forget the Lord, the Source, Guide, and Goal of our lives.

Our greatest challenge in the months and years immediately ahead is not securing a safe supply of clean water and food. It is not finding a haven in the country away from the big cities. It is not setting aside a horde of cash and gold for the dark days that loom on the horizon. Our greatest challenge by far is to remember the great truth which most tend to forget when danger is near: God is still God and He is in control of all these events. This means that we need to get His perspective on the events and learn from Him how to respond to them. And here, too, Isaiah is helpful since he addresses these things. to God's people in times of trouble.

### The Root Cause of Y2k

The first message concerns the root problem which is always the source of whatever turmoil occurs in this world. The problem is sin. In the very first verses of Isaiah we read:

Hear, O heavens, and give ear, O earth! For the LORD has spoken: I have nourished and brought up children, and they have rebelled against Me; the ox knows its owner and the donkey its master's crib; but Israel does not know, My people do not consider. Alas, sinful nation, a people laden with iniquity, a brood of evildoers, children who are corrupters! They have forsaken the LORD, they have provoked to anger the Holy One of Israel, they have turned away backward. (1:2-4)

All the while, God's people were more focused on their circumstances:

Your country is desolate, your cities are burned with fire; strangers devour your land in your presence; and it is desolate, as overthrown by strangers. (1:7)

But the Lord, through the prophet, begins by helping the people see the reason for the crisis they faced: their rebellion against God. As He said: "*Your iniquities have separated you from your God; and your sins have hidden His face from you, so that He will not hear.*" (59:2) Their sins brought about the circumstances they were experiencing. The real problem was not the Assyrians; it was their rebellion against God.

*The threat of  
cyber-turmoil is simply a  
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and in the fabric of our  
society.*

Likewise, our first response to Y2K ought to be self-examination, as individuals and as a nation, and don't have to look far to discern it. This nation was founded upon biblical principles of civil government and upon the biblical morality of its people. Our early days were blessed because we were, for all practical purposes, a Christian nation. But we have rebelled against God. We have outlawed God from classroom and courtroom. We in our laws have called evil good and good evil (5:20). And as we recoil from the revelations of perversity among the highest leaders of the land, we must acknowledge that wicked leaders are simply a reflection of the citizens who put them into office. Surely, if any nation ever had corporate sin, it is ours. Of course corporate sin begins with individual sin, so we must be sure to examine our own hearts for signs of rebellion

against God. And what Christian can look within himself and not find ample evidence of sin?

God not only deals with the sin of His own special people, He also responds to the sin of the nations who did not have a proper relationship with Him.

The earth is also defiled under its inhabitants, because they have transgressed the laws, changed the ordinance, broken the everlasting covenant. Therefore the curse has devoured the earth, and those who dwell in it are desolate. Therefore the inhabitants of the earth are burned, and few men are left. (24:5,6)

So our problem in America (and elsewhere) is not the many threats posed by Y2K. Our root problem is rebellion against God. The threat of cyber-turmoil is simply a reflection of the turmoil of sin in the hearts of men and in the fabric of our society.

We live in a moral universe. The character of God determines everything. We are made in His image and have a responsibility to yield to Him and obey His perfect will. To the extent that we fail to do that, we create pain, confusion, sickness, war, famine, and death itself.

It is impossible to understand the threat of Y2K without understanding that we live in God's world and we live or die by His rules. Any trouble we face in this life is traceable to sin. God didn't make a world threatened by starvation, plague, murder and mayhem. We brought all that on ourselves. We brought Y2K on ourselves. But Y2K is not the problem—it is merely the symptom. Sin is the problem.

### God's Judgment

Isaiah's second message to his initial hearers and to us is that God responds to sin with acts of temporal judgment. That is already apparent in the passages we have quoted. Con-

cerning both Judah and the surrounding nations, God was actively responding to their sin by bringing various forms of devastation on them.

George Mason, a delegate to America's Constitutional Convention, said, "As nations cannot be rewarded or punished in the next world, they must be in this. By an inevitable chain of causes and effects, Providence punishes national sins by national calamities." Our Founders understood that God acts in history in the rise and fall of nations and in their weal or woe while they continue for His set time upon the earth. Personal sin may not always be dealt with in this life since Judgment Day will set all right, but the corporate sins of nations must be dealt with by God's providence in history.

What were some forms of judgment that God brought to pass? A first form we see in the case of Judah is a lack of good leadership.

I will give children to be their princes, and babes will rule over them... As for my people, children are their oppressors, and women rule over them. O My people! Those who lead you cause you to err, and destroy the way of your paths. (3:4,12)

One sign that God is displeased is when He allows immature and inexperienced men, and women, to become their leaders.

By this measure it is clear that our nation is already under God's hand of judgment. Not only do we have an increasing shortage of masculine servant-leadership that invites women to fill governing roles, but we also have the specter of wicked leaders who, like children, cannot control their own bodily appetites. Such leaders also cause us to err by enacting laws that are contrary to God's law and our nation's Constitution.

A second form of judgment is a lack of the necessities of life.

For behold, the Lord, the LORD of hosts, takes away from Jerusalem and from Judah the stock and the store, the whole supply of bread and the whole supply of water. (3:1)

The marauding Assyrians threatened the very supply of food and water in Judah. But notice that it is "The Lord" who takes away these things. God was active through the Assyrians in punishing Judah for their rebellion against Him.

Should we not likewise see the Lord's hand in the events that are unfolding related to Y2K? What are the first two things that are on any-

*God's judgment may take the form of a loss of leadership, a loss of provision of basic necessities, or a withdrawal of protection... Or His judgment may include all of these at once.*

one's list of survival items as they prepare for Y2K? Food and clean water. Why do we have to be concerned that the supply of these necessities might be disrupted? Because of a "computer glitch"? Hardly. It is because God is punishing national sins by national calamities—and indeed worldwide sins by worldwide calamities—though the proud high-tech nations will be hit hardest by Y2K.

A third form of judgment is God's withdrawal of protection from His people. In a passage in which the Lord compares His people to a vineyard that He planted and cared for, He then describes how He will respond to their rebellion: "And now, please let

Me tell you what I will do to My vineyard: I will take away its hedge, and it shall be burned; and break down its wall, and it shall be trampled down. I will lay it waste." (5:5,6) The hedge or wall was a form of protection, a barrier against predators and enemies. When the Lord removed His protection, His people were subject to injury and destruction. That's how the Assyrians got access to the land and even stormed Jerusalem.

Another common item of acquisition among those preparing for Y2K is a gun and the ammunition to go with it. This is a response to the threat represented by the potential breakdown of law and order during the Y2K crisis. It is commonly anticipated that the cities will become burning war zones if the power goes off, the welfare checks stop, and food deliveries cease. The loss of electricity itself is a major threat since it would leave millions who depend on it for heat vulnerable to freezing winter weather. Again we may ask, "Is this potential loss of protection the result of a computer problem?" Yes it is. But that "problem" is simply a means by which the Lord of history is removing His protections from rebellious men and nations.

So God's judgment may take the form of a loss of leadership, a loss of provision of basic necessities, or a withdrawal of protection from danger, to name some of the most prominent examples. Or His judgment may include all of these at once. Sometimes He lets all hell break loose (to speak accurately, not profanely).

The flood in Noah's day was one such example. Isaiah describes such large outbreaks of God's historical wrath: "*Behold, the LORD makes the earth empty and makes it waste, distorts its surface and scatters abroad its inhabitants... The land shall be entirely emptied and utterly plundered, for the LORD has spoken this word.*" (24:1,3)

Y2K would appear to have the potential of being one of the greatest outpourings of God's wrath since the Flood. We can't help but notice, by the way, that after the Flood the Lord said He would not destroy the world again by water, nor would He destroy every living thing (Gen. 8:21; 9:11). He seems to have left Himself plenty of other options for some major outbreaks of judgment. And indeed, if Y2K is a worst-case scenario, it is hard to see how we will not see deaths in the hundreds of millions if not billions worldwide. It is conceivable that we could lose electricity and gas, banking, government, telecommunications, and transportation, to name the most vital elements of our modern way of life. This way of life could quickly become a way of death for scores of millions if the cities lose heat, water, food, and civil order for weeks or months. Y2K has the makings of an event that will be remembered for its devastation millennia from now.

### What God Aims to Do

We have already seen that the root cause of our present and future turmoil is sin. And we have seen that God responds to sin in history with outbreaks of judgment. But let's consider now exactly what it is that God aims to do through these events. Remember our starting point: God is God, and He is in charge. History is indeed, as many have observed, His Story. So what twist in His Story is He trying to achieve when He judges the sin of nations? There is much that could be said, but let's limit ourselves to two key purposes of God recorded in Isaiah.

God's first aim in judgment is to humble the pride of men and to exalt Himself. In a passage describing God's judgment on "the house of Jacob" we read:

Enter into the rock, and hide in the dust, from the terror of the LORD and the glory of His majesty. The lofty looks of man shall be humbled, the haughtiness of men shall be bowed down, and the LORD alone shall be exalted in that day. (2:10,11)

The first sin in the garden was an act of man's proudly exalting himself above God and His word. God dealt with that by humbling man and exiling him from the Garden. At the tower of Babel men united to "make a name

*God will indeed, it  
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for themselves" and reach heaven by their own works, but God humbled them by confusing their language and scattering them over the face of the planet. History is the story of men proudly aspiring to want to be like God only to be humbled by the one true God who is determined to share His glory with no other (42:8).

A recent posting on a Y2K forum read: "In the early 70s there was a drawing that hung on the walls of many a programmer's cubicle. It was a circular tower made of bricks and in every brick was the name of a computer programming language such as: COBOL, Fortran, Snobol, Algol, PL/I, etc. It was entitled 'Tower of Babel.'"

The point of the illustration was that these computer languages could not "talk" to each other, but there was more truth than the artist intended. For the modern Babel tower of humanist man's proud achievements is constructed in large part out of the computers and chips that have enabled so much progress in recent decades. And it is the communication

among these computers that will be stymied by the year 2000 date problem.

God will indeed, it appears, once again humble the pride of men. When Big Brother becomes a crippled dwarf; when the pit at the stock exchange falls silent; when the Pentagon can't find its missiles, much less launch them; when the lights go out, the dial tone is mute, and the banks lose all the e-money; when the New World Order becomes a new world of disorder—then the Lord will have the last laugh (cf. Ps. 2:4). As Isaiah also said, "The LORD of hosts shall be exalted in judgment." (5:16)

God's second aim in judgment is to teach the world about righteousness. "For when Your judgments are in the earth, the inhabitants of the world will learn righteousness." (26:9) Wouldn't you say the world learned a few things about righteousness at the time of the Flood? Yes, they learned the hard way, and a little late, but they learned. Likewise at the tower of Babel. The men of that day learned that God is in charge and He does not tolerate forever rebellious man's pretensions to self-sufficiency and independence.

Would you say that the inhabitants of the world are due for a lesson in righteousness? To ask the question is to answer it! If ever there was a time in which mankind needed to learn that God does not tolerate sin, that He demands righteous conduct from men, that He alone is God and will share His glory with no other, surely this is that time.

It is America in particular that needs the lesson. We are the nation that has squandered a godly heritage. We are the nation that has led the world in its idolatrous exaltation of science and technology. We are the nation that has led the world in the slaughter of its children. We are the nation that has mandated the accep-

tance of perversity while outlawing the law of God which condemns the same. We are the nation that approves as its leader a liar. When the rod of God's judgment falls, as it appears it surely will, then America will rightly be first in line to receive His blows.

But perhaps by God's grace the nation will learn righteousness once again. And given the global nature of Y2K, we might also dare to hope and pray that the whole world may, through the dark days ahead, be readied to learn some new lessons about God's justice and grace. Perhaps we stand on the verge not only of unprecedented judgment. We also stand on the threshold of a great stride forward in the advance of the gospel in the world. That would make the price of the Y2K turmoil worth it all. May it be so, may God teach the world righteousness in our day!

Paul spoke in Acts 17 of God's purpose as He works His will among the nations of the world:

And He has made from one blood every nation of men to dwell on all the face of the earth, and has determined their preappointed times and the boundaries of their dwellings, so that they should seek the Lord, in the hope that they might grope for Him and find Him, though He is not far from each one of us. (Acts 1:26,27)

God controls the rise and fall of nations with one great historical purpose: that men should come to know Him. Y2K may prove to be the greatest step forward toward the fulfillment of the Great Commission since the Reformation or, given the global nature of the impending upheaval, since Pentecost!

Having now considered Y2K in the light of man's sin, God's judgment, and God's great historical purpose, it is time to consider how we should respond to God's judgments in history. What is a godly response to the

Y2K threat? Before answering that question, we ought first to describe some wrong responses to Y2K. Again, Isaiah helps us find our way.

### *The Conspiracy Theory Diversion*

The first wrong response to God's judgments in history is what we could call the conspiracy theory diversion. In Isaiah 8:12 and 13 we read, "Do not say, 'A conspiracy,' concerning all that this people call a conspiracy, nor be afraid of their threats, nor be troubled. The LORD of hosts, Him you shall hallow; let Him be your fear, and let Him be your dread."

These verses follow a passage in which God had announced that Assyria would invade Judah. It appears that the people were latching

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onto the threat represented by Assyria, and perhaps even considered Isaiah a traitor in league with Assyria, and they discussed the threat in terms of "a conspiracy."

But they were missing the point. Instead of seeing God's hand at work in raising up an enemy to punish them for their sins, they were shortsightedly focusing on the human agents in the judgment and attempting to dissect the "conspiracy"—as if when they sorted out all the human

players in the threat they would have understood the real problem. The Lord, however, reminds them that it is not men but the Lord whom they should fear. He is the real "Enemy" behind the human threats, and they need to get right with Him.

Conspiracy theories are popular in our day as well. How many times have you heard discussions about what "they" are plotting to do? You know who "they" are: the Illuminati, the Council on Foreign Relations, the CIA, the United Nations. Now mind you, it's not that men do not plot and scheme to work their sinister plans on the rest of us. It's just that it's irrelevant. We should focus our attention on Him and not be distracted by giving too much credence to the bad guys. Satan is strong, but unintentional though it may be, he is one of God's most active agents. Remember, God is God. He's in charge.

There is a real danger that we may idolize evil. It seems that many Christians today believe the forces of evil are stronger than God and of the Lord Christ who is on the throne at His right hand. At least that's the impression you get listening to their breathless descriptions of what Satan and his minions are doing in this world. But we don't need to fear men nor demons—we need to fear God. "Let Him be your dread." Puny man cannot hurt us without God's permission.

We haven't heard too many conspiracy theories in reference to Y2K, though someone has suggested that this is all a government plot to gain total control of the economy and the citizens. Another proposes that Y2K will bring in a cashless society with implanted chips under our skin. All such theories are simply an expression of the knee-jerk inclination to believe in conspiracies. The truth is that Y2K is far more likely to result in the destruction of the government's

ability to exercise total control. Without the computers on which they have come to depend, ambitious men will not be able to enforce their dreams of domination. Y2K will liberate us, not enslave us. The conspiracy theory is a silly diversion. We need instead to think about what God is plotting through these events.

### Merely Trying to Fix the Problem

The second wrong response to God's judgments in history is an attempt merely to fix the problem and alleviate the threat. This approach, like the last, tends to leave God out of the picture. When Judah was threatened by Assyria they sought help from Egypt rather than from Him. His response:

Woe to those who do down to Egypt for help, and rely on horses, who trust in chariots because they are many, and horsemen because they are very strong, but who do not look to the Holy One of Israel, nor seek the Lord!" (31:1)

Making an alliance seemed like a reasonable plan to counteract the Assyrian threat. The only problem with that solution was that it was not God's solution. As a matter of fact, it became a way to "add sin to sin" (30:1) To their previous rebellion, God's people added the sin of responding to His discipline by just trying to escape the discipline. Assyria was not the problem and Egypt was not the solution. Their sin was the problem and the Lord was their solution.

Most everything you read about Y2K is about going down to Egypt for help. You read stories about software solutions, management solutions, programmer solutions, merger solutions, government-mandated solutions, financial solutions. But we have yet to read the story that suggests that the solution is to return to the

Lord God. Not that this would fix the computers. But computers are not the main problem. Sin is the problem and returning to the Lord is the solution. Whatever happens with the computers is comparatively irrelevant next to

*We have yet to read the story that suggests that the solution is to return to the Lord God. Not that this would fix the computers. But computers are not the main problem—sin is, and returning to the Lord is the solution.*

those issues. For now, our nation is adding sin to sin, merely trying to fix the problem, relying on an army of programmers and tons of money in a vain attempt to turn away God's hand of discipline. If God does not get to us by Y2K, He would find another way. There is no escape. God is God, and He is in charge.

You and I probably are not involved in fixing code in mainframe computers or replacing embedded chips, but we also are tempted to make this wrong response to the Y2K threat. We, too, may merely try to alleviate the threat. The other constant theme among the Y2K Internet subculture is that of preparation. There are whole Web sites devoted to survival. There are forums given over to personal Y2K planning: food storage, alternative energy sources, non-hybrid gardening, do-it-yourself medicine, relocation to the country, etc.

As we will see shortly, preparation is an entirely proper response to Y2K, but it is fraught with temptation. The danger is that we will become preoccupied with our preparations for survival, as if we could assure our own security through perilous days. We are tempted to make an idol of our preparations, of our money, of our food stores, of our generators, of our secure country location. But these are all worthless if God does not bless us. And if He is after us with His discipline, He can find us in the country as well as in the city; He can spoil our food supply and short circuit our generators.

It would be better to be physically unprepared for the Y2K threat and yet have our faith intact than to be prepared to the teeth without the Lord. The worst that can happen if we are not prepared physically is physical death. The worst that can happen if we are not prepared spiritually is that we lose our soul. Jesus said. "For whoever desires to save his life will lose it, but whoever loses his life for My sake will find it. For what profit is it to a man if he gains the whole world, and loses his own soul?" (Matt. 16:25,26)

Physical survival is not the first goal of the Christian confronted with Y2K, though that survival is seriously threatened. The godless make physical survival their highest priority. The Christian's highest priority is to "seek first the kingdom of God and His righteousness." (Matt. 6:31-33) Survival ought not be an end in itself. The question is, "What are we surviving for? What will we do after we survive? How will we exhibit God's righteousness and establish God's kingdom during and after Y2K?" That is all that really matters, whether we live or die in the process. So much for the wrong responses to the Y2K threat. Let's move on now to consider what exactly are the right responses.

## The Most Important Preparation: Repentance

We have already seen that Isaiah in the very first words of his book identified the root problem of sin among the people of God. He also in that context identified the most important response that godly people can make in times of turmoil. "Wash yourselves, make yourselves clean; put away the evil of your doings from before My eyes.... 'Come now, and let us reason together', says the LORD, 'though your sins are like scarlet, they shall be as white as snow; though they are red like crimson, they shall be as wool.'" (1:16,18)

Since God is the God of history and brings temporal punishment for sin in history, and since Y2K is quite clearly a punishment (it's not a blessing!), then the most important response that we can make to the Y2K threat is to repent of our sins, personally and corporately.

One great temptation for Christians at this moment of time is to be so aware of the sins of our nation that we forget our own sins. But repentance must begin with me, and with you. Without personal repentance there can be no national repentance. We must realize that it is the failure of Christians to uphold God's moral standards that has led to the spiritual downfall of our nation. The reason we have such public wickedness in America today is because we have had private wickedness among Christians for generations.

The sin may be the quiet idolatry of money and success. It may be the neglect of spiritual leadership in the home. It may be the violation of marriage covenants. It may be fornication and adultery, or the less visible lusts of the heart. It may be gossip, or bitterness, or jealousy. It may be a simple but destructive neglect of worship and prayer.

Whatever our sins, we must call them what they are, stop making excuses, wash ourselves in the blood of Jesus, and put away the evil once and for all. If you are making your list of Y2K survival items but have not made your personal list of specific sins for which you have to repent, you had better stop and do a reality check right now. Do you think God will bless your survival plans if you have not repented of your sins?

And please remember that repentance is not mere sorrow and mental assent that sin is evil (2 Cor. 7:10), it is a change of mind, a change of

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direction which bears the fruit of changed behavior (Matt. 3:8). You ought to be a different person as you head into the year 2000.

Beyond our personal confession of sin and repentance, we also have a responsibility for corporate confession. We are part of a nation that is under judgment. Who is to cry out to the Lord for mercy if not God's people here? When Nehemiah went before the Lord to prepare for his great min-

istry of restoring the people of God and rebuilding the walls of Jerusalem, he cried out,

[I] confess the sins of the children of Israel which we have sinned against You. Both my father's house and I have sinned. We have acted very corruptly against You, and have not kept the commandments...which You commanded Your servant Moses. (Neh. 1:6,7)

Nehemiah confessed his own sins, but also the sins of his extended family and of the nation as a whole. Likewise, we should be the priests of our families, churches, and nation. We should be those who stand in the gap in prayer and confession during these crucial days. If we will not do this, what hope is there for a redemptive outcome to Y2K?

Isaiah identified "a very small remnant" (1:9) which the Lord had left in Judah. It is the remnant who survive. But they survive because they are the ones who heed God's call to repentance and get right with Him. We should by all means aim to be the surviving remnant, but we should aim first to be the repentant remnant.

## Hiding from the Brunt of God's Anger

Although we don't want to become "survivalists" whose highest priority is physical preservation, it is a godly work to prepare to survive, so making preparations for survival is the second proper response to Y2K. "Come, my people, enter your chambers, and shut your doors behind you; hide yourself, as it were, for a little moment, until the indignation is past. For behold, the LORD comes out of His place to punish the inhabitants of the earth for their iniquity; the earth will also disclose her blood, and will no more cover her slain." (26:20,21)

This passage identifies the context as a time of historical judgment, a time when the Lord, after patiently

waiting for repentance, finally decides to pay back wicked men for their sin. (By the way, it is interesting to note that the cause of the Lord's anger is, among other things, the slain of the earth. We should meditate on the millions of slain unborn in American this past 25 years, those whose blood we have tried to hide, and consider how much "indignation" God has stored up for us as a nation when He finally moves to "disclose her blood.")

God waits for a while, sometimes a long while, giving men the opportunity to return to the Lord (2 Pet. 3:9). But "the day of the Lord" comes at last. Men seem to get away with ignoring Him and thumbing their noses at Him for so long, but He finally "comes out of His place" to punish the rebels. Surely we are in the early stages of such a visitation.

God's people are not supposed to be gluttons for punishment. They are to accept hardship as God's loving discipline of His children (Heb. 12:7), and they are called to be among the first to repent, but they are also encouraged to escape the brunt of God's judgment to the best of their ability. The image presented by Isaiah is one of a family going into the house, into an inner room, shutting the door, and hiding from the mayhem which God's outpouring of wrath is producing outside. It is presented as a temporary action ("for a little moment"); God's people are not permanently on the defensive. Normally they are on the offensive against the gates of hell and the devil himself. (Matt. 16:18; James. 4:7) Another way to say it is that sometimes the way to be most effective in the ongoing work of God in this world is to take a defensive posture.

As the sons of Issachar were commended as those "who had understanding of the times, to know what Israel ought to do" (1 Chron. 12:32), so we today must exercise discern-

ment about our times. If it appears that it is a period of God's indignation, then it is time to hide ourselves and our families to the extent possible. There is a time for godly people to run and hide, and if ever there were such a time, we are living in it.

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*The Lord no doubt has*

You see, there are seasons to God's actions in history. In normal times the priority is to mix it up with the world, not by way of compromise but by way of ministry, as salt and light, to be a leavening influence for the Gospel (Matt. 5:13-16). But when the abnormal moment comes, the moment of God's wrath on a big scale, it is time to hide for a while, so that we will live to be salt and light on the far side of the ordeal. God preserves a remnant, and the remnant are those who know when to go into hiding.

Of course, even in the "hiding" phase, there will be plenty of opportunities for ministry, and we are always and everywhere to be the aroma of Christ (2 Cor. 2:15), but there are times when that ministry is a by-product of our attempting to insulate ourselves from God's wrath.

Some Christians who are living in denial, unwilling to accept that their whole way of life is threatened by Y2K bravely talk of remaining in the cities to minister during the crisis. It is

ironic that Christians who have so failed (as we all have) to be salt and light during recent decades, as our nation has slid into greater and greater wickedness, suddenly feel a great urge to be salt and light and to stand in the teeth of the storm as witnesses. No doubt God will call some to minister in the worst of times and places, but many who imagine themselves "called" to such a ministry will find themselves simply among the first to be destroyed by God's wrath, victims of their own lack of discernment.

Not that everyone can or should flee the cities, though that may be the single most significant step anyone can take toward survival. "Hiding" can take many different forms. Any step you can take to isolate your family from the world system which is about to be judged is a step toward hiding. Take steps to become independent of the power supply system, of the food supply chain, of the water supply system, of the banking system. To the extent that you are disconnected if and when these systems fail is the extent to which you will have fled to safety and protected your family.

### **Act in Faith, Not in Fear**

So repentance is the most important response to God's judgment in history, but preparing to endure the judgment is also part of a godly family's plan. We come now, finally, to that response which must underlie every other response that we may make to the Y2K disaster: a deep and enduring trust in the sovereignty and goodness of God. In Isaiah 26:3,4 we read, "You will keep him in perfect peace, whose mind is stayed on You, because he trusts in You. Trust in the LORD forever for in YAH, the LORD, is everlasting strength." Perfect peace in the midst of unprecedented national turmoil? Yes, because the source of

peace is not changing circumstance, but the unchanging God.

Jesus and His disciples were in their little boat on the sea when a great windstorm arose, began to fill the boat with water, and threatened to sink it. Jesus, however, unlike his panicky disciples, was asleep in the stern. They awoke Him and asked with agitation if He did not care that they were dying! After rebuking the wind—"Peace, be still."—He said to them, "Why are you so fearful? How is it that you have no faith?" (Mk. 4:40)

The disciples' fear was very reasonable under the circumstances —if God was not good, and if He was not in control. Fear results from the belief that circumstances are out of control and that bad things may happen to us. But for those who know God as their God through Jesus Christ, circumstances are always under control, His control, and nothing bad can happen. "And we know that all things work together for good to those who love God, to those who are called according to His purpose" (Rom. 8:28). Even bad circumstances serve a good purpose and are not ultimately threatening. That is why the Holy Spirit through Paul could give the command not to be anxious:

Be anxious for nothing, but in everything by prayer and supplication, with thanksgiving, let your requests be made known to God; and the peace of God, which surpasses all understanding, will guard your hearts and minds through Christ Jesus. (Phil. 4:6,7).

Anxiety is a normal response to a threat, but Christians can and must choose to cast their anxiety on the Lord, knowing He cares for them (1 Pet. 5:7). As they give thanks for the blessings they already have received, and as they make request for what they lack, they rise above their threatening situation. They then gain peace, an irrational peace from the perspec-

tive of circumstance, but a real peace from God who cares for His own and who arranges everything for their ultimate welfare. Paul practiced what he preached when he said,

"I have learned in whatever state I am, to be content. I know how to be abased, and I know how to abound. Everywhere and in all things I have learned both to be full and to be hungry, both to abound and to suffer need. I can do all things through Christ who strengthens me. (Phil. 4:11-13).

Y2K threatens hunger, abasement, and worse. It thereby presents what may well be the greatest test of faith that you will ever face. If our response is panic and dread, we have

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failed the test. Do you believe God is good and that you have His favor in Christ? Do you believe God is God and controls every circumstance? Then He is in charge of Y2K and He will use it for good for you. That does not mean you will not go through times of peril and loss, and even death. It just means that you, too, can find contentment in any and every situation. You can have a peace from God that is an anchor for your soul even in the midst of extreme danger.

So before you race around storing up food and provisions, cast your anx-

ety on Him who cares for you. The Lord no doubt has a lot of purposes for Y2K, but surely one of His chief purposes is to purify the faith of His children and teach them to rely on Himself alone.

Are you freaking out at the looming Y2K disaster? Yes, it's bad all right and could prove a disaster for your family, despite your best preparations. But get a grip! God is God, and He is good. No matter what happens we can handle it through the strength Christ gives. None of us is planning to live forever on this earth anyway. Our goal while we remain here is simply to live in a way that honors Christ.

Y2K will test the faith of those who profess Christ as Savior and Lord. Many will prove to have a shallow faith that buckles under the weight of the trial. May your faith and mine be found strong in these days.

Y2K appears to be a worldwide upheaval in the making. We seem to be in the early stages of an outpouring of God's wrath against proud, rebellious man. We must repent. We must prepare. And in all our preparation, we must trust in our one sure Refuge.

God is our refuge and strength, a very present help in trouble. Therefore we will not fear, even though the earth be removed, and though the mountains be carried into the midst of the sea.... The LORD of host is with us; the God of Jacob is our refuge. (Ps. 46:1,2,7)

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# Missions and the Millennium Bug

*The vast majority of Y2K concerns address the American situation. If any nation is going to be prepared for Y2K, it will be America. If any national church is going to have the resources to ride out potential disruptions, it will be the American church. But what about developing countries? Many of their infrastructures are barely holding on as it is. What about churches in those countries? Many are already enduring persecution and poverty. Above all, what about missions in the Two Thirds World? In this article the authors present us the missions side of the equation.*

By Jason Mandryck

**B**y now most of you have undoubtedly heard a lot about the Millennium Bug. Articles addressing it have appeared in most Christian magazines. You know what it is, why it happened, and what might cause it to go wrong. Perhaps you're tired of hearing about it and wish the problem would go away. Well, businesses and governments undoubtedly feel the same way. But they have significantly more assets that they need to protect. So they are acting to prevent themselves from being caught holding the bag. Read this excerpt from one WECer's travel insurance.

#### General exclusions:

You are NOT covered for claims arising out of:

- Your suicide or attempted suicide
- Bloodsports
- Your taking part in civil commotions or riots of any kind
- Any loss, damage, expense or indemnity... that is caused by the failure of any computer hardware or software or other electrical equipment to recognise or process any date as the true calendar date or to function correctly beyond that date.

In plain English, "we won't cover you if you have a death wish, do something incredibly stupid, or if the Millennium Bug causes problems."

## What about Missions?

What actions are we as Missions and missionaries taking to ensure that we are not left holding the bag? There are tens of thousands of articles on Y2K issues: technological, financial, philosophical, industrial, ethical, legal, and so on. There are even many resources for concerned Christians.

But the vast majority of these resources address American congregations who can afford to buy survivalist equipment and set thousands of dollars aside for contingency plans. If any nation is going to be prepared for Y2K, it will be America. If any national church is going to have the resources to ride out potential disruptions, it will be the American church.

What about developing countries? Many of their infrastructures are barely holding on as it is. What about churches in those countries? Many are already enduring persecution and poverty.

What about faith missions operating in the Two Thirds World? Many are unprepared for the shock that may await them.

## How to Prepare

Fortunately, most field missionaries are a flexible lot. They are used to intermittent power, bureaucratic delays, and inconsistent availability of

consumer goods. So then, what's the problem? Here is a list of essential issues that NEED to be addressed well before that historic day.

## Technological Concerns

**Computer Hardware.** The entire Y2K issue is computer derived. From mainframe supercomputers to personal PC's the issue is the same. As most of you know, due to a 1950's programming trick to save precious storage space and memory in the data, year dates were entered as 2 digits instead of 4 digits (75 instead of 1975). When the new year comes, computers everywhere will see 1/1/00 as 1/1/1900. What you need to do is ensure that your PC will work when the year turns over. Regardless of your computer's age, you need to check your system. You can do this by contacting your supplier, or by acquiring a program that diagnoses your system for you. There are many places where these can be acquired; Tantra's ClokTest is one of them, available for free at [www.pcadvisor.co.uk](http://www.pcadvisor.co.uk).

If your system needs attention, it could be one of several problems. You may merely need to manually change the system data on January 1st. If you have an older machine you may need

to get a BIOS upgrade, or replace your BIOS chip altogether. There are other ways of circumventing this problem, but they often create as many hassles as they solve. In a worst case scenario, you may need to replace your PC altogether, or trundle along with wrong dates. Depending upon your use of your PC, this latter scenario could be simply a minor irritation.

**Computer Software.** This is another issue altogether. Basically, software falls into three categories.

A. *Legacy software:* coded and compiled by individual programmers specifically for companies and organizations. The vast majority of you do not use this kind of software; if you do it is unlikely that the software involves date-based calculations. If it does, you may have a serious problem on your hands. "Norton 2000" is a software package that will evaluate your legacy software for Y2K readiness, among others.

B. *Old vendor software:* DOS-based or Windows 3.1 (16-bit) software. Vendors are generally not upgrading these applications for Y2K compliance, so you may have to upgrade. You can check you software's compliance at [www.vendor2000.com](http://www.vendor2000.com)

C. *New vendor software:* 32-bit (Windows 95 and newer) software. These are almost entirely free of complications due to Y2K issues. The exception is that of storing year dates: different applications have different pivot dates (the watershed year in determining whether a 2 digit year is assumed to be in the 1900's or 2000's).

## Travel Concerns

The chances that planes will fall out of the sky on January 1, 2000 are very slim for 2 reasons. Even a Y2K bug foul-up does not just drop a plane straight into the ground. There are still pilots trained to fly their air-

craft in emergencies. Also, if airlines are not confident of the safety of their aircraft, they will not fly at all. Traveling with airlines based out of developing countries will be more of a risk than travelling with the leading global airlines.

Air travel will be more expensive if you are travelling over the New Year, because the airlines are wringing that extra bit of money out of fliers due to the potential risks involved to them. It

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is advisable not to fly late in December or in January if you can avoid it. There is no guarantee of trouble, but there is no guarantee that things will run smoothly, either.

If you are based in the Two Thirds World, it would be wise to look into travel options across the country, regarding potential evacuation scenarios.

## Communications

This is a tricky one. The telecommunications infrastructure is fragile as it is, and due to the rapid exchange of calls and information it is especially vulnerable to the Y2K bug. In some countries the lack of capital to upgrade and "de-bug" their systems has caused them to be regarded as dangers to the other countries' systems. Nations in southern Africa and eastern Asia (and elsewhere) may find themselves cut off from international telephone exchanges merely because

of the potential risks they pose to the "safe" countries. In other words, if you live in the Two Thirds World, there is a distinct possibility that your ability to place international calls may be put on hold! This problem, of course, would also affect the transmission of e-mail and faxes.

What to do in this situation? Make preparations to be self-sufficient for some time, but also look into communications alternatives. Two suggestions were the bus/bush taxi system for forwarding correspondence, and possibly being able to access a telephone at places where it is more likely to stay online (government officials, the post office, etc.).

Even the experts cannot be sure what is actually going to happen. The mass media will be keeping a very watchful eye on proceedings, so keep an ear to the ground. As things develop, you will need to stay informed, most particularly concerning if and how your own local area is affected.

## Money Matters

The Y2K scenarios run the gamut of predictions regarding economics from a negligible blip to a return to a barter and precious metal based economy. A greater threat is that of economic depression due to disruptions and the stockpiling of goods. A recession or depression may well trigger inflation, devaluing currencies in many countries. What should missionaries do?

**Support from Sending Base.** Some WEC sending bases are already planning to send to their workers two months of support in December 1999. This is in anticipation of headaches on both the home and field ends. Thank goodness that most of us do not have to contend with financial and accounting software! It is probably advisable to receive an extra month or two of support at the end of

1999, if that is at all possible. Contact your sending base to find out what they're planning to do regarding this issue.

**Cash on hand.** This issue is another prickly one. It is better to have at least several days' worth of cash on hand, perhaps more. It is also advisable to have this cash safely on hand well before December 31st. There are several reasons for this; the foremost being that cash will still enable you to make purchases, even if the banks are down, the credit lines are down, and the power is out. Many of us function on debit or credit cards. There is only a small chance that such transactions will be significantly disrupted in the West, but it is best to be prepared for such possibilities.

Many analysts fear that a cash run on the banks will precipitate a greater financial crisis than the bug itself. Even if that only happens in the USA, it will impact all of us. But we owe nothing to the global banking empires! Set some money aside each month henceforth rather than doing a massive withdrawal nearer the date. Bite the bullet now to prevent more pain later. A widespread inflationary depression would devalue your money regardless of where it is kept, so it is better to have it on hand than devaluing in the bank.

**Savings accounts.** Three pieces of advice here: First, read the fine print of your financial accounts. This includes pension plans, mutual funds, chequing accounts, and every other form of monetary deposit. Can you withdraw all your money at any time? How does the bank ensure the safety of its customers' deposits? Second, contact the institutions that use your money and ask them what they are doing to prevent Y2K-related problems from affecting them. Are they Year 2000 compliant? When will they be? Finally, and most importantly,

GET IT ON PAPER! IT being your financial status. Keep copies of bank statements and every other financial record or transaction. Continue keeping them until later into next year. Several banks are already claiming that they are or will be Y2K compliant. But a few bits of paper now could potentially save you from many headaches later on.

### Basic Supplies

Some Christians are planning to go into survivalist mode, i.e., stock up with 6 months' worth of basic supplies including guns and bullets) There is sufficient interest in solar panels, gold coins, and dried foodstuffs to keep suppliers almost consistently out of inventory. On the oppo-

***Regardless of  
what happens, God  
will never abandon  
nor forsake us. After  
the crisis passes  
and the smoke clears  
we still have an  
unevangelised world  
to reach!***

site extreme, others are ignoring the issue entirely.

Many of us spend hundreds of pounds (dollars) every year on insurance for our cars, homes, bodies, teeth, and even our lives. Surely it is wise to spend some money insuring against something that is far more likely to happen, that is, a temporary breakdown in social services and conveniences. The USA government is telling its citizens to prepare for Y2K as if it were a hurricane (a couple of days of sitting tight). But if even a significant minority (20%) of the West were to prepare for a week or more,

the storehouses would empty VERY quickly and precipitate a more immediate crisis. For those not in the West, a store of basic necessities for a longer period, say, two to three weeks, would be more advisable.

**Medicine.** If you take prescription medicine or prophylactics, then it would be wise to acquire a few months' supply well in advance, and for as long as the treatments remain useable. If your work involves medical supplies and equipment, then the same advice holds true but in greater importance. The most you can really do is stock up on supplies.

**Food and water stores.** Who doesn't use food and water? In many places, it is just not feasible to stock up with more than a couple of days' food and water supply. But where it is possible, it is definitely advisable to have at least a few days' worth of staples stored up - staples that don't require power to prevent spoilage! If the worst-case scenario occurs, no amount of food will be enough; the more you store away, the greater a target you become for other hungry people. But wise storage of food and water may enable you to have a very tangible witness to others as you feed them in Christ's name (think Joseph). Food and water are things you are going to consume regardless, so store them away!

**Fuel, light and power.** This section could be termed miscellaneous items. Things that immediately come to mind are batteries, cooking gas bottles, a full tank of petrol (gasoline), candles, kerosene, decent flashlights, and so on. Each person's context will require different preparation. Plan to cope with a possible shortage by being self-sufficient for a few days in the West (celebrate the New Year with a full tank of petrol!). In the Two Thirds World, 3-4 weeks of complications in these areas is entirely possible, and therefore missionaries should

be prepared to be self-sufficient for a longer period of time.

### Language Issues

If your skills in the local or trade language are not sufficient to cope readily in such times of crisis, then you should consider planning on being at home for a month or more on either side of the millenium. In the event of serious problems, such inability to communicate clearly (and quickly) will only pose a threat to yourself, your family, and your mission.

Sending bases should seriously consider whether or not to send new workers to fields in the Two Thirds World in the second half of 1999. Is it wise to expose vulnerable new recruits to unnecessary risk?

### Faith Factors

The issue of faith is perhaps more important than any of the above. It is important that we recognise that the millennium is a celebration first and foremost of 2000 years of God's faithfulness and Christ's gift to us. The extra attention given to the year by the Y2K bug should spur us on to proclaim this more boldly.

*Apocalyptic doomsayers.* Some elements of the Western media have tried to paint Christianity as a Millennially-obsessed apocalyptic loonie-bin. This is most likely a non-factor elsewhere, but we must assure people that our response to the New Year is positive and faith based, and not tainted with end times inaccuracies based around a date errantly set by a monk centuries ago. There are Christians out there misrepresenting Christ in this way. Don't allow yourself to be numbered among them.

*Have answers ready.* Understand the issues surrounding Y2K. But more importantly, "be prepared in season and out of season". "Always be prepared to give an answer to everyone who asks you to give the reason for the hope that you have." (1 Peter 3:15). There may be many distressed and desperate people early next year—people who will want to know the hope that we have!

*Be ready to share with those in need.* If you choose to prepare yourselves for shortages of services and goods, then prepare to share. Those with stockpiles may have three options: defend it by force, have it taken away by force, or share it willingly. Even if your stores consist of a single meal or a few batteries, such concern for our neighbours in times of crisis may go a long way in winning them to Christ, a treasure far greater than any stash of materials.

Therefore, know ahead of time what you are prepared to give away without protest. In the Two Thirds World, be mentally prepared for possible hostile demands for your stores of food and fuel. Are you prepared to give up your painstakingly crafted plans in the face of angry or upset visitors? What about your children? What do you owe them? One strategy is to mentally "give" a store of supplies to your children, kept hidden or cached, so that in the face of

demands, you may surrender your own supplies but keep a clear conscience about withholding that which you've "given" to your family.

### Conclusion

In conclusion I present five brief observations:

*Be aware!* Understand the issues involved in Y2K. Why are the banks so vital? What about consumer confidence? How will my PC be affected? How did this happen in the first place?

*Be ready!* What you can prepare for, do so. Don't be like the foolish virgins who were caught outside.

*Be relaxed!* You cannot prevent 99% of potential Y2K disruptions in society and your life from actually occurring. Prepare for what you can, leave the rest in God's hands.

*Be humble!* The ONLY certainty about the Y2K bug's impact is uncertainty! Nobody knows exactly what will go wrong or how badly it will strike.

*Be faithful!* What we ARE certain of is our Lord. He is unchanging, ever faithful, and with us always. Regardless of what happens, He will never abandon or forsake us. After the crisis passes and the smoke clears we still have an unevangelized world to reach! May the Lord prepare us to do this task and do it well.



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# The Y2K Computer Problem

## Youth With A Mission Report

*YWAM leaders have been researching the Y2K issue for at least 24 months. Their research has produced this report with the goal to prepare YWAM leaders and missionaries. It has been written so that their mission may better understand the signs of the times and know God's strategy as we move into the new millennium. May this be true of us all!*

by YWAM Global Leadership Team

**A**t the August 1998 meeting of the YWAM Global Leadership Team in Brazil, the issue of the Year 2000 computer problem (Y2K) and its potential impact upon YWAM bases was reviewed. We, as leaders in YWAM, want to provide some helpful information as to how we might prepare for this potentially serious problem. We also want you to consider this issue in relation to what God is doing at the beginning of the new millennium.

Loren Cunningham referred to the Year 2000 issue and the Asian economic crisis in the University of the Nations Lausanne newsletter of August 1998. He writes:

What are we to do? I believe we should seek God's view of this crisis, and act accordingly. God says in the first of the Ten Commandments, 'Thou shalt have no other gods before Me'. What are our two major idols in the West? The ECONOMY and TECHNOLOGY. The impending crisis is God's way of getting our attention, showing us just how vulnerable our gods are. It only takes a little 'bug' to topple both at once! God is acting out of His kindness and mercy. He will do anything necessary to bring us back to Himself.

As I constantly travel the nations of the earth, I have watched the growth of Christianity become the event of the century, while the media of the world has virtually ignored it. Look at these remarkable growth patterns...

•Africa 1900, 3% claim Christian-

ity. Today, over 50% of all Africans claim to be Christians, at least nominally.

•Latin America 1900, the evangelical revival begins with 50,000. Today, close to 100 million claim to be dedicated followers of Christ.

•Today in India, 103 million claim to be Christians, with a new church born every seven minutes.

•In China, 1,250 are coming to Christ every hour (30,000 daily).

•South Korea has 7,000 churches in Seoul alone (there were practically no churches in Korea when the century began).

•In Eastern Europe, millions have come to know Christ personally since the fall of the Berlin Wall.

What about Western Europe and North America? Miraculous visitations, refreshments, even stirrings, but no sweeping revival across the nations. Not yet. How will revival come? Only God knows the exact way it will happen, but this we know: in all revivals, idols fall.

### What is the Problem?

The Year 2000 problem arises from the fact that many computers will not correctly advance their computers time clocks beyond 1999. This is because most computer systems are not programmed to recognize 4 digit dates, but only the abbreviated 2 digit dates, e.g., 98 not 1998. When the year 2000 arrives, most computers will read the year 00 as 1900 and not 2000. The computer will produce either erroneous results, reject legitimate entries or shut down completely.

Our society has become heavily

dependent on computers. We use them every time we go to the bank, make a phone call, stop at a traffic light or turn on a light switch. Our society is therefore vulnerable to anything that might disturb this equilibrium. The problem will manifest itself in different ways at different times:

•1 July 1999—many companies and governments begin their financial year on this date.

•21 August 1999—another quite separate computer problem (but also connected with dates) will occur on 21 August 1999 when the Global Positioning System (GPS) satellites will function as if it were 1980 again.

•9 September 1999—the code 9/9/99 was used to denote the end of a program. The computer might assume that it is completing the file.

•1 January 2000—this is the most important day on which many non-compliant computers will malfunction.

•3 January 2000—this is the first work day (Monday) of the new year and many problems will become apparent on this day.

•29 February 2000—this year is a leap year but many computers will not recognize it as such.

•31 December 2000—as it is a leap-year there are 366 not 365 days in this year.

This problem can occur at many different levels. Many large govern-

ment agencies and business corporations still use 30-year-old mainframe computers that have millions of lines of code that need to be checked. Many personal computers are also at risk, particularly if purchased prior to June 1997, as well as the software they use. In fact, some current software is not compliant. e.g., Excel 97 as well as some versions of Windows 95.

### Getting God's View

We need to seek God's view of the crisis and act accordingly. The impending crisis might be God's way of getting our attention, and/or of bringing the greatest revival we have ever seen. In our planning we need to believe for the best but prepare for the worst. We need to, as far as is possible, get our own computers, programs and equipment repaired and encourage those around us to do likewise. Well in advance, we need to develop contingency plans as a type of insurance policy to cover the possibility that there may be no, or limited, electricity, water, banking, petrol, air travel, phone calls, etc., for a few weeks or even months at about 1 January 2000. Our survival may depend on having a supply of essential items such as food, water, cash and fuel. We also need to be leaders, making our preparations now and leading our civic communities in caring for and trusting one another, in cooperation and collaborating together for the good of all. The issue needs to be viewed from a spiritual, leadership and management perspective, not from a technological one alone. We need to be open to finding ways of ministering through the new opportunities that will occur. Developing neighborhood, community and church networks may be an essential part of our ministry enabling us to serve those around us who are not prepared.

### The Scope of the Problem

There are different aspects to the Year 2000 computer problem that need to be examined to gain an understanding of the issue.

#### Hardware Factor

Many large government agencies and big corporations still use 20-30 year-old mainframe computers that are difficult to upgrade and expensive to replace. Unless fixed, many personal computers purchased prior to June 1997 will not function correctly in the year 2000 (93% failed the BIOS test). Of the computers that came out in 1997 a staggering 47% failed the BIOS test. Many older models such as 286's or 386's are expected to freeze unless the date is set back 10 years.

***The issue needs to be viewed from a spiritual, leadership and management perspective, not from a technological one alone.***

Embedded chips were thought to be a major problem in themselves. Of the 25 billion of them worldwide, 2% or 50 million of them are expected to fail, but technicians do not know which 2%. All of them have to be checked and replaced if necessary. They are located in satellites, oil rigs at the bottom of the ocean, planes, traffic lights, ATM's, electricity grid systems, phone systems, medical devices, lifts, cars, etc. Recent developments, however, appear to indicate that embedded chips are not as date sensitive as first believed.

#### Software Factor

Many of the software programs

written 20-30 years ago have very little documentation available showing what was done or how it was done. Very few of today's programmers understand old computer languages, let alone being skilled in them.

Many of these large mainframe programs have 200-400 million lines of code that need to be checked for date sensitivity. After fixing, each program needs to be tested for errors. Many current programs for PC's on sale today are not compliant, so even newly purchased software needs to be checked for compliancy. Even earlier versions of Windows 95 and 98 are not compliant.

#### Human Factor

There are not enough experienced programmers in the world today to fix the problem before 1 January 2000. As indicated above, many computer programmers do not understand the older computer languages (up to 400 in number) that mainframes use.

No programmer is perfect and often new problems are introduced into the system while trying to eradicate the old problems. Testing is therefore essential.

Professional surveys of government agencies and businesses indicate many people are still in denial mode. Therefore, they are not even attempting to solve the problem at all. Others are hoping that Bill Gates will find a quick fix and all will be well.

#### Time Factor

The date by which all computers have to be fixed is set. There is no way of re-negotiating the completion date of this project. But the majority of all computer projects within the industry will not be finished nor fixed on time.

Large organizations commonly take about two and a half years to make their systems compliant. If they had not started their fix by mid-1997, they are already late and they are highly unlikely to successfully finish on time. Many organizations now con-

cede that they are unable to fix all their computers by the deadline. They are now talking about fixing only their so called "mission critical systems."

#### **Financial Factor**

The estimated costs of the world wide fix vary, but a figure of US\$ 300-600 billion is often quoted. Other experts say a more realistic figure is US\$ 1.5 trillion. Also the cost of the legal bill arising out of problems associated with year 2000 problems is estimated to be about US\$ 1.5 trillion.

#### **Societal Factor**

Those who have completed their work will be impacted by those who do not. Some companies have already said they will cut off non-compliant suppliers or sources of data. Because of our interdependencies, the integration of many systems requires that the whole problem be solved, not just most of it.

There are domino and multiplier effects, e.g., if the electricity goes out, the sewerage works and the water supply will also go out even if other sectors are compliant. The total consequence is thus much worse than if one utility had gone out.

### **Global Impact**

It is not adequate to look only at one's own organization, community or nation. The year 2000 computer problem is a global one that requires a global perspective.

One highly respected international research company, the Gartner Group, predicts that a total of 40% of companies world-wide will experience a mission-critical failure because of Y2K. In the USA, which leads the world in its state of Y2K readiness, it is estimated that only 15% of companies will experience a Y2K mission-critical failure whereas countries such as China and Indonesia are expected to experience a failure rate of 66%. Its predictions on a country-by-country basis are as follows:

•Level 1 (15%): Australia, Belgium, Bermuda, Canada, Denmark, Holland, Ireland, Israel, Switzerland, Sweden, UK, USA.

•Level 2 (33%): Brazil, Chile, Finland, France, Hungary, Italy, Mexico,

***The impending crisis might be God's way of getting our attention and/or of bringing the greatest revival we have ever seen. In our planning we need to believe for the best but prepare for the worst.***

New Zealand, Norway, Peru, Portugal, Singapore, South Korea, Spain, Taiwan.

•Level 3 (50%): Argentina, Armenia, Austria, Bulgaria, Colombia, Czech Republic, Egypt, Germany, Guatemala, India, Japan, Jordan, Kuwait, Malaysia, North Korea, Poland, Puerto Rico, Saudi Arabia, South Africa, Sri Lanka, Turkey, United Arab Emirates, Venezuela, Yugoslavia.

•Level 4 (66%) : Afghanistan, Bahrain, Bangladesh, Cambodia, Chad, China, Costa Rica, Ecuador, Egypt, El Salvador, Ethiopia, Fiji, Indonesia, Kenya, Laos, Lithuania, Morocco, Mozambique, Nepal, Nigeria, Pakistan, Philippines, Romania, Russia, Somalia, Sudan, Thailand, Uruguay, Vietnam, Zaire, Zimbabwe.

The international survey also predicted the rate of Y2K mission-critical corporate failures on an industry basis. Some industries, such as the banking industry are expected to experience a less than 15% mission-critical failure rate, while others, such

as health care and government agencies which are expected to experience a 66% mission-critical failure rate. The Gartner Group's predictions are as follows:

•Level 1 (15%): Insurance, Investment Services, Banking, Pharmaceuticals, Computer Manufacturing.

•Level 2 (33%): Heavy Equipment, Aerospace, Medical Equipment, Software, Semiconductors, Telecom, Retail, Discrete Manufacturing, Publishing, Biotechnology, Consulting.

•Level 3 (50%): Chemical Processing, Power, Natural Gas, Water, Oil, Law Practices, Medical Practices, Construction, Transportation, Pulp and Paper, Ocean Shipping, Hospitality, Broadcast News, Television, Law Enforcement.

•Level 4 (66%): Education, Health Care, Government Agencies, Farming and Agriculture, Food Processing, Construction, City and Town Municipal Services.

Overall, the Gartner Group believes that the Y2K problem will not cause the global business meltdown that some analysts have predicted, but that it will cause a negative impact on the world economy that will be felt for 3 to 5 years. For more details see <<http://gartner11.gartnerweb.com/public/static/home/00073955.html>>

Recently, there has been significant economic, political and social turmoil in various parts of the world which has substantially reduced the capacity of those countries to address Y2K problems. This turmoil is expected to continue and in fact worsen. The possibility of a world recession is being considered quite openly, apart from the consequences of Y2K's impact. Social unrest is also expected to increase as a result of the economic problems in many countries.

Another factor expected to have a strong impact, particularly in Europe,

is the implementation of the Euro back in 1 January 1999. This has been a massive ongoing computer job and has diverted valuable resources away from their Y2K repair programs.

### The Business Sector

Many experts agree that 20% of the world's businesses could collapse due to Y2K problems. Another expert says that upwards of 70% of businesses in Asia will either fail outright or experience severe hardship because of Y2K.

Many large businesses in Western nations started their repair program a few years ago. Publicly, they are saying that they will be ready on time, but privately many have grave fears that they will not meet the deadline. Unfortunately, there are some who have commenced their repair program too late and have no hope at all. Many large businesses in Asia and Europe are in that category.

Small to medium size businesses are the backbone of the economy in many countries and yet this sector has been very slow to take up the challenge to become compliant. Many experts are extremely concerned at their lack of awareness and activity and fear many business failures throughout the world.

Some countries such as Cambodia and Burma, will experience minimal direct impact on their businesses as they are not heavily dependent on computers. However, they may be affected indirectly as they encounter difficulties in international trade and banking.

Dr. Edward Yardeni, the chief economist of Deutsche Morgan Grenfell, has now raised the probability of a deep global recession in 2000 - 2001 as a result of Y2K from 30% to 70%. As 1 January 2000 approaches, more and more people are agreeing with him.

### The Government Sector

On a world-wide basis government is the sector that is least prepared to face the next century. In many countries the governments are already facing major issues such as social unrest, collapsing stock markets, high unemployment rates and political turmoil, and do not have the time or resources to devote to yet another problem that will not affect them for another year or so. Also, many political leaders see it merely as a technical problem and are not aware of the issues at stake. The American CIA is also now "looking beyond the technical problem and assessing the social, political and economic tumult that could flow from interruptions of essential services in some fragile societies." Major interruptions to government services are to be expected in many countries.

In the USA, the majority of the government agencies are well behind schedule with the exception of the Social Security Administration which says it will be ready on time. A number of experts are extremely concerned that the Internal Revenue Service (tax dept.) will not be ready on time, nor will the vast majority of other agencies. In reports to Congress many of these agencies are stating they will not be ready until 2007 and later.

Many people are heavily dependent on an uninterrupted supply of government services, and are very vulnerable to the slightest breakdown in any of these services. In a time of crisis many people look to the government for help, but this might be a situation where it is unable to provide the required assistance as it is so busy fixing its own problems.

More than 40% of Europe's public sector systems will not be prepared for the date changeover. Being the middle of winter in the northern hemi-

sphere, there will be heavy dependence on public utilities for heating purposes.

Leaders in the West who are aware of the problem are not wanting to cause panic amongst their peoples for fear of the political consequences. They remain silent or make only low-key warnings. Countries such as Bangladesh that have a comparatively small government sector with very limited government services are expected to fare much better in this area as their impact on the lives of people is minimal.

### The Banking Sector

In many countries banking is the sector that leads the way in Y2K preparedness. Banks were amongst the first to be aware of the problem as they are heavily dependent on dates and date-based calculations. Many big banks in the West are spending huge sums to fix the problem, e.g., Citibank is spending US\$ 600 million. Many bigger banks are saying publicly they will make the deadline. However, many smaller banks are not taking the issue seriously and many are expected to fail or to merge with larger compliant banks.

Peter de Jager, a world Y2K expert, reports that a World Bank survey shows a low number of its members are even aware of the problem. Other countries such as Japan publicly "say that they do not have any major problems and how they achieved that happy state of affairs is something of a mystery," according to Moody's Investors Services. So unfortunately, many non-Western banks are likely to encounter major problems which could lead to their ceasing operations. Also, banks that are compliant will cease to deal with the non-compliant ones for fear of infecting their own data.

Many experts fear that bank runs could destroy the banking system as

people withdraw their money for fear of losing it. Most banks keep less than 5% of the deposits in cash. Only a relatively minor panic could thus cause a banking collapse. Some analysts are predicting a global stock market crash before 1 January 2000, possibly as early as the middle of 1999.

### **The Three Pillars of Society**

There are 3 basic pillars of our urban social structure—the banking system, the energy system and the transportation / communications systems. If one or more of these systems were to fail, then our whole social structure is threatened. No one knows what degree of failure is necessary before a total meltdown will occur.

•Our whole society has come to depend on a highly technical and extremely complex banking system. Our economic growth depends on it.

•Just as important to the survival of our society is the continuous flow of energy in one form or another. An electricity failure occurred in Auckland where the central business district was without power for 5 weeks and caused massive dislocation to the whole city. Without electricity, banks and ATM's will cease to operate, businesses will close, lifts will not work, water pumps will not work, buildings cannot be heated, nor will traffic lights operate. Modern cities become virtually unlivable, particularly if combined with fuel shortages which are also an extremely critical part of the system.

Rick Cowles, a Y2K expert on the US electricity system, stated in August 1998 that "I am convinced that there is a 100% chance that a major portion of the domestic electrical infrastructure will be lost as result of the Year 2000 computer and embedded systems problem. The industry is fiddling whilst the infrastructure burns." Unfortunately, the

situation is similar in Australia and in other countries that are much further behind in their repair project.

•Modern cities depend heavily on adequate transport and communication systems. We need food to be transported to cities, people need to

***The most likely consequences of Y2K lie between the moderate and major impacts. However, this is not expected to be uniformly distributed across the world or even within a nation.***

get to work, businesses need supplies and deliveries of products. Phone calls and data transmission need to occur to enable our cities to function smoothly. If the production of oil is interrupted or the supply reduced, then many domino effects will follow.

### **Possible Scenarios**

There are four broad outcomes that could eventuate:

#### **—Minimal Impact**

The first possible outcome is what could be called the "official view." This is where leaders and heads of organizations are saying that there will be minimal disruption resulting from minimal numbers of technical problems. The official word is "Don't worry, be happy."

#### **—Moderate Impact**

A moderate impact is where the electricity grid goes down but only for short periods of time, or there is systematic shutdowns of parts of the grid, the banks get some of their entries wrong, there are some problems with the fuel supply and ration-

ing might occur, some people die as medical equipment malfunctions, traffic lights behave erratically, people get trapped in lifts when the power goes out, aircraft traffic is curtailed as airlines try to get their planes and airports operational again, etc.

#### **—Major Impact**

A major impact would be where months before the turn of the Century, banks start limiting cash withdrawals to prevent bank runs, stock markets fall dramatically as well as real estate prices, and the government starts warning of expected major interruptions to essential services. Once the New Year arrives the power grid goes down and remains down for a few months; the banks are unable to provide any international transfers to non-compliant banks (of which there are many) while some banks close down altogether; large production lines such as car assembly plants grind to a halt as they do not have the parts to keep the lines going; petrol is severely rationed; supermarket shelves become rapidly empty; and government departments resort to writing out social security cheques by hand and imposing a flat rate income, goods and services tax in order to simplify the system.

#### **—Meltdown**

The last possibility would be where the 3 basic pillars of society are so disrupted for such a lengthy period of time that the whole social system collapses. This would be considered a 'meltdown.' No-one knows at what point this could happen, but some analysts consider that this is a possibility that cannot be ruled out.

The question is which of these scenarios is the most probable. The minimalist scenario is not really an option. We already know from the lack of preparedness of many businesses, government agencies, and countries that this scenario is not possible.

The most likely consequences of Y2K lie between the moderate and major impacts. However, this is not expected to be uniformly distributed across the world or even within a nation. Two cities only 50 kms apart might have quite different repair programs and contingency plans, and be impacted by Y2K quite differently.

### **How Will YWAM be Affected?**

This as an opportunity for you and your ministry to be able to be prepared so that you can minister to others who might not be prepared. There might be many people and organizations that will need practical assistance.

#### **Overview**

YWAM can be seen to be particularly susceptible to Y2K related issues on five grounds:

1. It is a charitable organization, dependent upon donations for many of its programs and activities.
2. It is built upon "volunteers", people with a high sense of personal commitment.
3. It has an international mission agenda.
4. It is dependent upon transport and communication technologies.
5. It is located in major urban centres.

A Y2K crisis as described above will include a deflationary global recession. Even if banks are open for business, cash will be in short supply. It is highly probable that international telegraphic transfers will be impossible and that international check clearance will take several weeks or months. Donations for YWAM programs and activities can therefore be expected to be dramatically reduced (either finance will disappear, donors will have more critical causes for their finance, or banking services will fail).

While many YWAM staff are completely 'sold out' and fully committed

to the people they serve, we can expect some (especially those with families in the field) to choose to return home just before the crisis arrives. Some staff might see this as 'home leave' (at an opportune time) or as part of their own personal emergency contingency plan.

Under its international mission agenda, YWAM has placed a large number of staff in foreign countries. In doing so, YWAM has relied heavily

***We also need to be leaders, making our preparations now and leading our civic communities in caring for and trusting one another, in cooperation and collaborating together for the good of all.***

upon international travel, communications and banking, which are likely to experience major difficulties at the turn of the century.

YWAM also has a significant percentage of its staff located in major urban centers where the impact of the Y2K problems will be felt most severely. Some experts are advising that, if at all possible, people should relocate themselves to safer, smaller communities which are less dependent on modern technology.

Individually, Y2K problems may last for only 2-3 months, but their combined effect is expected to restrict YWAM's ability in the short-term to place and maintain staff in countries other than their own.

In our planning we need to be careful of going to either of two

extremes. One is of predicting a doomsday scenario while the other is one of complacency. We need to seek God's view of this crisis and act accordingly. The impending crisis might be God's way of getting our attention and/or of bringing the greatest revival we have ever seen. In our planning we need to 'believe for the best but prepare for the worst.'

We also need to be leaders, making our preparations now and leading our civic communities in caring for and trusting one another, in cooperation and collaborating together for the good of all. The issue needs to be viewed from a leadership and management perspective not from a technological one. Each YWAM Base should keep itself informed on the compliance state of its surrounding community (but beware of listening only to the "official view" that may be conveyed to the public).

Many people are planning to fix their computer problems late this year such that a bottleneck at that time seems inevitable. Many wiser people are aiming to complete their repair program and contingency planning by mid-1999 as significant Y2K problems could well start appearing by then.

As circumstances are likely to vary significantly from one operating location to another, each operating location should implement its own Y2K planning, incorporating the following recommendations as appropriate.

### **Recommendations**

We recommend that leaders make hard copies of accounts, loans, registers, bank records, etc. Obtain certified hard copies of all licenses, registrations, agreements, etc. Keep them in a safe location (but not in a bank). Check computers (hardware and software) and other technological equipment and ensure compliance. Be sure to check for embedded chips.

Write letters to organizations providing critical supplies to check their compliancy, e.g., banks, telephones, electricity, email, postage system, water, fuel, transport system, and donors. Change banks (or service provider) if your bank (or service provider) is not likely to be compliant in time.

Avoid doing business on and near Y2K significant dates. Plan schools and travel schedules conscious of limited air travel on or about 1 January 2000. If travelling, check which airlines will be flying, which air traffic control centres will be operational, which airports will be functioning, etc. Include an indemnity statement on issues relating to Y2K in school application forms, staff forms, outreach proposals, etc. Read local and major national newspapers as well as recommended web sites, keeping informed of major developments both locally and overseas.

Assess your local area's dependence on technology and generally how compliant is it. Develop plans to provide for on-going ministry during the crisis. Inform all staff, including those working in a foreign country, of the possible consequences.

Many Y2K commentators are advising people to establish a storehouse of essential requirements should the worst scenario eventuate. If located in a large city, some commentators suggest developing contingency plans. As much as is practicable reduce your debt. Keep minutes of staff meetings informing staff of Y2K issues, copies of staff memos re Y2K issues, copies of letters sent to suppliers, etc., for evidence in case of legal action being taken against Base or Ministry.

Be available to assist staff as required in their personal decisions. Establish a plan for repatriation in case of emergency. Promote 'localization': ensure that local staff have the

organizational capacity to maintain and operate the project/program.

### **Legal Liability**

A Year 2000 litigation specialist, Warren S. Reid, has provided guidelines to assist businesses in preparing for possible legal challenges. Many experts are saying that the cost of litigation will in fact be greater than the cost of the repair program, so leaders

***Preparations can be made well in advance of the arrival of the new century. Some items which are readily available today may not be available at any price during the second half of 1999.***

need to be aware of the possibility of legal problems. YWAM leaders will be in a strong position to contest legal action in the event of Y2K incidents if they can produce the following as defence:

Evidence they undertook to educate themselves. Evidence they established a committee to oversee a Y2K repair project and encouraged staff to get involved. Evidence they directed that a software inventory be compiled. This inventory should also include a legal audit, i.e., the location and review of all license and maintenance agreements relating to third party licensed software to identify vendors and their responsibilities. Evidence they had conducted a risk assessment and produced a statement of impact. Evidence they had communicated the nature of the problem and action steps to all levels of staff. Evidence

they had developed a detailed plan to address the problem, including all resources necessary, a budget and critical path analysis. Evidence that the plan was executed on a timely basis. Evidence that all approaches to addressing the problem were considered (outside consultants, specialized training, etc.). Warren Reid also explains that there is no requirement that Y2K solutions be perfect. Human error will be allowed for by courts when considering failed solutions, so long as a well-accepted process was followed.

### **Ministry Challenges**

Opportunities for mercy ministry and other projects serving the poor and distressed will abound. Self-reliant community development projects are likely to be more sustainable than those requiring considerable input from outside. Prepare for opportunities for outreach, counselling and service to economic refugees (either internally displaced or from abroad) or those poor in your community who will be affected. Networking will provide many opportunities for ministry. If the crisis is prolonged, physical preparations alone would not be enough. Many people will be dependent on the following types of networking:

1. Neighborhood networking. Build strong relationships with your immediate neighbors for pooling of resources for survival and protection.
2. Community networking: Christian leadership (statesmanship) in networking with government, churches and other community leaders in the development of community disaster and relief plans. Such plans will require Christian leadership in the pre-crisis formative stages as well as in the time of crisis itself.
3. Church networks: can distribute essential commodities, create sup-

port groups, and use the opportunity for evangelism providing hope and meeting people's physical, emotional and spiritual needs.

4. Supply networks: Plan where to obtain a supply of essential goods to be able to minister to those who need assistance.

### **Physical Preparation**

These preparations can be made well in advance of the arrival of the new century as some items which are readily available today may not be available at any price during the second half of 1999. Commentators suggest that we obtain supplies of the following, sufficient for at least a few weeks.

Food: Staples that are non-perishable. Water: Store drinking water in bottles if no other alternative is available for heating and cooking purposes, and emergency car usage  
Seeds: Use non-hybrid type in case there are food shortages. Medicines/  
First-aid kit: Procure essential ones.  
Cash: Get enough for a few weeks .

In conclusion, may we all better understand the problem and the signs of the times and know God's strategy and blessings as we move into the new millennium.

*[Editor's note: This article is a reprint from the YWAM web site (www.ywam.org). It was prepared by Stephen Goode of the YWAM Global Leadership Team. You can contact Stephen Goode at ywammmi@loxinfo.co.th]*

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**Editorial**


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*(Continued from page 1)*

our nation, as well as for the peoples God has called us to serve in His name. It is a call to renewal of faith and cooperation with God and with each other as we face the crisis .

Perhaps as never before, and especially for us in the West, we are going to have to trust (lean on) God's Word, and learn how to live in times of crises, deprivation and confusion, in times of want of ease, luxury and plenty. Could it be that God is calling us back to simplicity, helping us get off the treadmill, and fully trusting in Him who stills the storms and feeds the bird of the air—trusting in our Sovereign and Benevolent Lord?

This is not to say we don't need to fix our computers or that contingency plans are irrelevant. Rather it means being guided as Joseph was, who not only saved himself and his family, but saved Egypt and the world from their crisis.

The last two articles in this Special Edition are reports by two major mission players regarding Y2K. Jason Mandryck writes about "The Millennium Bug and Missions" which is written from a WEC perspective. The other is the Youth With A Mission statement on Y2K. Both articles are very revealing since they give us a model of what mission agencies (at least two major ones) are telling their people what to do in this crisis.

Much more could (and will be) written about Y2K, including as it relates to missions. You will notice that the articles in this edition are replete with resources on this topic. Our prayer is that the Lord would guide you, and all His mission efforts, to assess the Y2K crisis, make the appropriate preparations and come through it with renewed faith, hope and strength in order to finish the task of world evangelization in AD 2000 or soon there after. So be it, for the glory of our God.

Photo here  
of  
Hans  
Weerstra

*Hans Weerstra*  
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