

dvances in science and medicine promise to increase both the quality of human life and life expectancy. If the current research assaults on cancer and heart disease are successful, there would be a major impact on the lives and probable longevity of baby boomers, who will be in their 70s and 80s in 2025. A great many boomers could live very long lives, possibly fulfilling the prediction by antiaging physician Ron Klatz that more than half of baby boomers will live healthy lives beyond 100.

Increasingly, medical science is also providing crucial repairs and reconstructions, such as tissue, hip, and knee replacements, with organ replacements a promise for the future. These advancements offer individuals the ability to deal with conditions that would otherwise be confining or crippling.

Beyond the research that is increasing life expectancy, science is also exploring ways to extend the human life span beyond 120 years. Research into telomeres and telomerase suggest that it may be possible to prevent the shortening of telomeres or possibly rejuvenate them. If successful, this could be one avenue toward increasing life spans. (A telomere is a region of the chromosome that protects it from deterioration.)

There are broad implications for society as people live longer or much longer lives. The lengthening of life may be gradual or sudden. If both cancer and heart disease become "curable" by 2025, there could be a substantial leap in longevity. The impacts could be enormous. The U.S. Social Security system, for example, could be in serious trouble.

On the other hand, boomers who realize that they may live to 100 and still be healthy could elect to stay in the workforce for an extra decade or more to build up their retirement plans and maintain their current incomes. Moreover, working seniors anticipating very long lives may postpone their withdrawals from Social Security in order to maximize their income when they do start collecting.

So if the human life span is extended beyond 120 years, then immortality, or at least extremely long lives, must be considered. What will

people do to keep life interesting, whether they live extra decades or extra centuries? If you were told that you could live to 110 in good health, how would that change your life? What would you do differently than you would if you expected your life to end in your 80s? Instead of only expecting several years of retirement, you'd be getting decades.

Life at 140?

Here is how to think about the "quality of life" as you grow older much older. Will you be happy with your life in your 90s, or even your 140s? What would provide a preferred quality of life, or happiness? Would simply being alive and healthy be sufficient?

To start, we can divide our lives into six personal domains or categories, then project some of the major forces that will affect these domains in the future and outline personal strategies for addressing these forces and creating a positive outcome. These domains are:

- 1. Activities.
- 2. Finances.

Personal futuring will get more complicated in the future. Try planning for your "old age" when you might live to 120-or longer! A futurist offers some tips. By Verne Wheelwright

NG A VERY LONG LIFE

- 3. Health.
- 4. Housing.
- 5. Social.
- 6. Transportation.

Within this format of personal domains we will explore some of the impacts and choices of a very long life for individuals, considering both positives and negatives in each domain.

Activities: Keeping Busy As a Centenarian

If you do live to be 100 or more, what will you be able to do, and what will you want to do?

If people know they can live long, healthy lives, they may extend their present careers, plan for or choose multiple careers, do volunteer work, or stop working altogether. They may seek further education, whether in preparation for a new career, to upgrade their skills, or just for the learning experience. Others may turn a hobby into a new career. Some individuals may find that a career as a full-time or part-time caregiver for a spouse or parent(s) has become their new role.

The decision to retire from work is more than a financial decision; it is a decision that affects every domain, although most obviously the activities domain. If you retire at 65, what will you be doing in your 80s, 90s, or possibly much longer? If you are 65 now, you will only be 80 in 2025, and expectations are high that benefits from advances in treatment of heart disease and cancer will increase your life expectancy. Those advances may be sufficient to take you to 2040. By then, it is possible that the human life span may also be increased.

Some countries have mandatory retirement ages, but worldwide, attitudes and rules are changing. By the time the baby boomers reach their 80s, the barriers may be gone.

Will you want to work full time, and if so, to what age? A recent article in BusinessWeek details the growth in demand for temporary and contract workers. This is an area that may prove attractive to older workers who have their own health insurance (Medicare in the United States) and wish to take breaks between employment assignments.

"As healthy lifetimes extend beyond 100, people may cycle through multiple careers and continued education."

• The Future: For those who want to work late into life, there may be challenges. Some careers—such as airline pilots, military personnel, police officers, and even teachers—have mandatory retirement rules or laws in place that limit the age of workers.

Discretionary time appears to be important to people, and the ability to take temporary leave, then return to the labor force from time to time, may appeal to older workers.

Individuals who elect to stop working will have time to pursue sports and hobbies, travel, and spend time with grandchildren or in their later years even great-great grandchildren. A current generation in retirement has found that technology has provided broad access to information, instant news updates, entertainment, easy communication worldwide, and lots of ways to fill time. Yet, a life filled with little more than television, reading, or e-mails can become unsatisfying or even boring.

For many people who are aging in good health, this may be a time for adventure. That may include extensive travel, time in the wilderness, outdoor sports, or participating in events for which they have not had time during their working lives. Another option that older people are taking advantage of is education. Many are returning to school to take

your leisure time. Therefore, learning opportunities and periods of formal or informal training may still be among your activities.

Finances: Paying for The Future

Finances—income, expenses, investments, insurance, credit cards, debt, taxes, and assets—is the domain that usually receives the greatest attention when people start planning for retirement and their future in later years. In large part, this is because your financial situation can either enhance or limit your options in all other domains. If you don't have adequate income to cover your needs and your wants, your life will be restricted.

Currently, even those who do have retirement savings may find that

"One effective strategy is to learn, at any age, to live below your means."

advanced degrees to prepare for new careers or simply for the learning experience. As healthy lifetimes extend beyond 100, people may cycle through multiple careers and continued education. The increasing availability of college courses online and course materials from top-quality institutions may further the desire for higher and higher education.

One thing favoring older people who want to continue working is the ability to work from anywhere. Computers, the Internet, smart phones, online software, conferencing, and a growing array of tools allow people to work successfully outside of traditional offices, because the tools can follow the worker.

• **Strategies:** As you think about your own future and the possibilities of a very long life, consider what activities will keep you enthusiastic about life when you are 100 or even 150. What would you like to be doing at those ages?

Keep in mind that even staying up-to-speed with rapidly changing communications and entertainment technologies will demand much of what seemed enough for a lifetime 20 years ago no longer yields sufficient income to pay all the bills. Income and assets may also be reduced upon the death of a spouse, and expenses can skyrocket with a serious illness

One major investment for most families is their home. In the past, people (and lenders) expected mortgages to be paid off before retirement, but attitudes appear to have changed, so some elders will be forced to continue working in order to meet their obligations. In 2007, about 68% of older homeowners owned their homes free and clear, according to the Administration on Aging, which suggests that nearly a third of older homeowners still carry a mortgage.

• The Future: One important question every individual should answer is, "How long must I work before I can afford not to work for the rest of my life?" Once you know the answer to that question, you can then develop strategies that meet your financial needs and your preferred lifestyle.

What will be the long-term source or sources of your income? What events could interrupt or reduce those sources? For example, many seniors have invested in certificates of deposit (CDs) because they were secure. The problem they discovered is that, when the economy falls, interest rates on CDs also fall, reducing income. Other investments, including stocks, bonds, commodities, currencies, and real estate, are also vulnerable to market changes.

• **Strategies:** One effective strategy is to learn, at any age, to live below your means.

Do not be too trusting. Older people are targets for fraud and scams.

Decide who will manage your money, either as your adviser or as a representative if you are no longer able to manage. If you (or you and your spouse) are managing your money and investments now, could your spouse take over the responsibility for managing your finances very late in life? If not, who?

Be extremely cautious about giving control over any of your assets to any one individual, no matter how close or competent that individual may appear. Multiple individuals, as in a trust, may be safer. A trust is a legal vehicle that can include several people who should be protecting your interest. An additional consideration is that a trust may exist for many decades, while individual advisers may not.

Health: Staying Alive And Thriving

Health encompasses your physical and mental health, including health care, nutrition, exercise, medications, and prevention of illness or injury.

If you are sick or disabled, the overall quality of your life may be affected or limited. There are some health conditions that can be managed with regular medication. High blood pressure or enlarged prostate are examples of conditions that can affect the quality of your life, but can be controlled with regular treatment. Diabetes can generally be managed with monitoring and careful attention to diet.

All of these conditions become

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more common as one gets older, so it is not unusual for people in their 70s and 80s to take multiple medications every day to control or manage their conditions. Yet, most of these people are able to enjoy high quality of life.

• The Future: The big changes in medical science that are on the horizon will be largely related to cures and repairs, followed by maintenance. More types of cancer will be controlled or cured, adding many years of life for recovered patients. New treatments will replace chemotherapy and radiation, relieving patients of some of the severe effects of treatment and improving quality of

Although medical science will probably reduce many of the risks of disease and death, science may not be able to stop the aging process in the foreseeable future. Your body and mind will still require maintenance and care to avoid illness and prevent deterioration.

You should plan to work at keeping your body healthy and in good condition. The physical condition of your body when you are 50 or 60 will provide the foundation for the rest of your life. If you enter your 60s in buoyant health and physical condition, you have a much better chance of retaining that condition into much later life. If you are already declining in health and physical condition at 60, you will have to work extra hard to get up to normal and to maintain good health.

Alzheimer's and other brain conditions or diseases appear directly associated with aging. Research is promising, but could take decades to find answers for some conditions. In the meantime, there appears to be considerable benefit in mental and physical exercise, as well as in maintaining multiple social relationships.

• Strategies: Some powerful advice comes from James Rowe and Robert Kahn, authors of Successful Aging (Dell, 1998). They offer three

specific components of successful aging: avoid disease, engage with life, and maintain high cognitive and physical function.

Nobody gets sick or injured on purpose, but a lot of people have health problems simply because they are not taking precautions to prevent those problems. Smoking and inhaling polluted air make people sick, but millions of people worldwide continue to smoke and breathe polluted air every year. Improper diet can cause diseases, including diabetes, but again, millions have the problem but have not changed their eating habits.

Inoculations can prevent disease, regular screenings can detect disease, and simple hygiene can stop bacteria from gaining a foothold. So yes, it is possible to avoid many diseases, illnesses, or conditions by being aware of your health and taking reasonable precautions.

Strive for early detection of any disease or condition with screenings and regular examinations.

Exercise your brain and your body throughout your life. The human mind and the human body both seem to thrive on exercise. Diet is also very important in this area. Both the brain and the body need the right

You should also be aware of how to protect your mind and body, including your eyesight, hearing, joints, organs, and skin.

If you become sick, suffer injury, or have surgery or other problems, get completely well as quickly as you can. Do the therapy. These are not times to waste energy on anger, selfpity, or pride, but times to focus all your energy on making as full a recovery as possible as quickly as possible. Why quickly? When you have a weakness in your body or mind, that weakness may make you vulnerable to some other illness or in-

When medications are prescribed,

take them for as long as the doctor says to continue. If in doubt, ask. People have strokes, die, or suffer serious consequences from stopping medication inappropriately.

Take advantage of medical technology whenever it is appropriate. Older people often suffer for years from problems that can be treated. Knee and hip replacements are examples of currently available remedies, and many more will be developed in the coming years.

Housing: Planning Where to Live

Substantial numbers of people over 60 move to a different address. For many, this is simply downsizing from the family home, but for a great number, this is an opportunity to move to a new neighborhood, a warmer climate, get out of the city, or even move to a different country. Some become "snowbirds," living in a northern climate part of the year and in a southern climate the rest of the year. As elders have aged, there has been a progression from homes to care facilities (or with relatives), to nursing homes, or to hospices.

• The Future: Historically, about 30% of noninstitutionalized elders live alone, and most of those are women. This statistic may change dramatically if life expectancy increases substantially in the future. A number of housing alternatives have come into existence over the past 50 years: group homes, adult communities, retirement communities, continuing care retirement communities, and assisted living facilities, each offering advantages and alternatives. An increasingly popular option is receiving care at home.

As people grow older, they may find themselves or their spouses in any of four different stages of life:

- Independent.
- Vulnerable (needs some help).
- Dependent (requires care daily).
- End of life (daily care or hospice

Each of these four stages can take place in a family residence, but some preparation of the home is necessary; the last two stages often require a full-time caregiver. The alternative is a care facility, such as an assisted living or nursing home.

• **Strategies**: What kind of housing would you prefer if either you or your spouse needs long-term care? Think in terms of your first three choices, because different conditions may require different solutions. Or you might approach the subject from the opposite direction: Which are the least-desirable choices for long-term care? Nursing homes should be considered if skilled care is required, so it is important to know what is available and what the differences are between nursing homes. The Medicare Web site (www.medicare.gov) offers Nursing Home Compare, which can give you valuable insights into comparing nursing homes, and also offers alternatives.

Even before you make any kind of move, make your present home safe and easy to live in at all ages. Consider preparing your home for caregiving should it be necessary on a temporary basis or longer.

You and your spouse will benefit by discussing, understanding, and writing down each other's housing or care preferences for each potential future life stage.

Social: Relationships Matter

The Social realm covers your relationships with family, friends, acquaintances, co-workers, advisers, and other people.

One of the first things that people notice when they retire from full-time work is that they have lost their social "roles." For years, they have been associated with a career, a company, and a position, and all of this is suddenly gone. Also for years, they have spent large amounts of time with co-workers, clients, and even competitors, many of whom they viewed as friends. Suddenly, the link is broken, and all those people are no longer a real part of one's life. Some friendships will continue, but most will probably fade quickly.

Roles may change in other ways as well, such as when one spouse becomes responsible for care for the other, or when a child becomes responsible for a parent.

In many cases of role loss or change, people go through the equivalent of a

grieving process (denial, anger, bargaining, depression, and acceptance). In the case of retirement, some will be relieved and ecstatic to be free. In either case, they eventually find new roles and go on with life.

In earlier generations, older people who became widows (or widowers) or required care moved into their children's homes. This still occurs, yet a significant number of older people indicate that they will seek other alternatives, as they do not want to burden their children.

• The Future: Although there is an expectation that baby boomers may live very long lives, many people in the generations ahead of the boomers are already living very long lives. Some boomers may find themselves in their 80s and caring for parents who are centenarians.

Who will be your family and your friends when you are in your 90s or older? A recent poll of 100 centenarians suggested that being close to family and friends was the most important factor in healthy aging.

If your parents are boomers or younger, they may live past 100. If their health fails, will you participate in their care or management?

As people live longer, they are likely to have larger extended families. At 100, you might have four or five generations of living descenmaintaining and continuing to build your social networks may be very important.

Further, when people move to nursing homes or other institutional settings, it can become very difficult to maintain normal social relationships with friends. Suddenly your friends must always come to where you are, and under whatever rules or surroundings are imposed by the caregiving organization. If you are suffering from Alzheimer's or are too sick to talk with visitors, this probably doesn't matter. But if you are still healthy and able to socialize, you may be better off to explore other alternatives. That may involve remaining in your own home and receiving whatever assistance you need there, or moving to a facility that supports your efforts to maintain relationships with friends and family.

Computers, the Internet, and networking have already changed how people socialize. Families that have spread apart over great physical distances are able to exchange e-mails frequently and talk together face to face on their computers with the aid of webcams and services such as Skype. It seems logical to expect that new services will be introduced that keep families, friends, and acquaintances in close contact, possibly with the aid of 3-D avatars or holographic

"At 100, you might have four or five generations of living descendants."

dants. Think about those numbers and assume approximately 20 years between generations. When you are 100 or more, your children could be 80, your grandchildren 60, your great grandchildren 40, your great-great grandchildren 20, and your great-great-great grandchildren infants. A person who lives to 150 might be a great-great-great-great-great-great grandparent!

As you grow older, friends and family members will die. One of the great concerns of many very old people at the present is that they have no friends. They have lost their social networks. This suggests that

images as technologies are enhanced and new approaches introduced.

• **Strategies:** Make an effort to build and nurture relationships with family members and friends at every age level.

Anticipate that individual roles will change, particularly upon retirement, but at other times as well.

Become involved in organizations where you can contribute your time and your knowledge while interacting with other people.

Participate in activities and organizations wherever you have an interest.

There are several legal documents that every individual should consider. Preparing these documents "The future may usher in new alternatives for personal transportation, such as exoskeletons that can help you stand, walk, run, and perform other personal activities."

will assure that your interests are protected or met in the future:

- Will.
- Directive to physician (e.g., "Do Not Resuscitate").
- Medical power of attorney.
- Financial power of attorney.

Transportation: Alternatives for Mobility

Transportation encompasses all of your various mobility needs and the methods available, including walking, personal transport, and public transportation.

In the United States, the automobile is probably the most important form of personal transportation. Consequently, a driver's license can be very important to people of any age, including seniors who are often at risk of losing their driving privileges due to an age-related condition, such as poor vision. Older people have most of the same needs as the rest of the population. They must go to food markets, doctor appointments, pharmacies, and elsewhere to meet their needs.

Some senior-living facilities offer transportation for their residents, an important service. Some communities provide door-to-door bus services, but other public transportation follows a fixed route or may not be manageable.

Even more important than transportation as we usually think about it is mobility—i.e., the ability to get around in the most basic sense, walking. For individuals who are unable to walk, or are limited, there are options, including wheelchairs, scooters, or other aids to mobility.

• The Future: The future may usher in new alternatives for personal transportation, such as exoskeletons that can help you stand, walk, run,

and perform other personal activities. Wheelchair technology has already evolved into chairs that can climb stairs and raise the passenger to eye level to hold a more normal conversation; other innovative products will be introduced as well. Scooters and motorized wheelchairs have become common, enabling people who would otherwise be disabled to live independent lives.

One of the exciting technologies on the horizon is intelligent or self-driving cars. Driverless systems are be-

Conclusion: Preparing Your Personal Future

Exploring these six domains within each individual's life offers an opportunity to see life from different perspectives and at great depth. Most important, the domains provide platforms from which to explore the long-term future in detail. The discussion here should raise questions in each domain that readers can explore on their own.

Overall, one valuable inference that can be drawn here is that people of any age who are in good health today should be prepared to live to be centenarians. Obviously, not everyone will reach 100, but the numbers are increasing. It appears worthwhile to develop a strategy or at least a contingency plan for living beyond 100.

For the younger generations, say younger than 50, it is reasonable to expect that life spans will increase during your lifetime and that your

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ing tested, largely as a result of the successes in the DARPA competitions, and are expected to be available to the public before 2020. This technology could fill a substantial need for older drivers, presuming that licensing requirements are adjusted to recognize driverless cars.

· Strategies: Beyond automobiles, each individual or family must consider what their transportation needs will be in the future. Is it important to be near bike paths, a waterway, an airport, or a rail station?

Try to anticipate your transportation and mobility needs about 10 years in advance. Is your home suitable if you would need to use a walker or wheelchair? Is it near public transportation or car-sharing services? If you move to a new home, consider how you will meet your transportation needs if you can no longer drive or provide your own transportation.

potential for a very long life will rise dramatically.

For all ages, an effective strategy is to create a personal strategic plan for the next 10 years of your life, then update it regularly. Beyond that, you can create a vision of your future at 110, or, if you are under 50 now, a vision for life at 150.

Then you will be prepared for whatever life brings.



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