

OUR EVOLVING WORLD AND OUR CHANGING LIVES

1880-2000

To commemorate the 120th anniversary of The Science and Art Club of Germantown---and also to mark the turn of the millennium---a number of Science and Art Club members have contributed the following reflections about the changes and major developments in their fields of expertise during the last 120 years.

ARCHITECTURE

Elie-Antoine Atallah, Architect
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Une époque qui ne crée pas est une époque qui meurt. [The era that does not create is the era that dies.]

Philippe Geffré

The resurgence of conservation has been validated in terms of the positive meaning of "conservation." The word has come to signify the guardianship of architectural heritage, history, and memory. "Modernization," by contrast, has become associated with demolition and the abolition of memories. Conservation demands a path into eternity. Its counterpart, modernization, has been defined as progress. But inevitably it abandons its own past. Does the work of Le Corbusier make Palladio's work obsolete? Or did the Renaissance diminish Gothic architecture?

In science, development, search, and progress demand that yesterday becomes outdated and obsolete. It is science's goal, not just its destiny, for without it science has no future.

To quote Vittorio Gregotti, renowned international architect, educator, and editor of *Casabella*:

Modern projects critique society rather than forming a natural part of it; that is, it is able to question both the limits of its own arrangements and the relationship between reason and progress. Thus, it encourages the very

questions about unity of history, systems, and ends that have been presented as the illusions of modernity.

It has been argued that architecture's goal should no longer be the creation of critical tension, but rather it should bring about a natural relationship with the taste of the masses. Such arguments lead to the illusion of liberty and the idea of infinite flexibility and subsequently the absence of horizons. This perspective is presented to the public as an aesthetic of stylistic familiarity, an illusion of identity and inclusiveness that transforms all things into folklore or quaintness, supposedly an antidote to the anonymity of the power that guides it in an intimate solidarity of culture. In response to such a critique, projects seem to be an assorted mix of context (misinterpreted), modernity (as in technology), and a reference to art (in a grotesque manner and a gesture to creativity), all tossed in with pseudo-environmentalism and some other ingredients at will---as if an experimental recipe in one's own kitchen---to produce a chaos without an idea, a goal, or remotely a meaning. Let us not omit the most magical ingredient of all: flexibility, which is the door to public participation (perceived liberty and democracy). Interchangeability and plasticity are the outcome, inherently devoid of form or horizon. In brief: lack of architecture.

The foremost essence of architecture is coherence and consistency. This has often been altogether dismissed and forgotten, producing projects where the exterior and interior coexist in a schizophrenic state (i.e., a Victorian armoire holding a high-tech entertainment center, a colonial garage housing a Porche Boxter.) Architecture is science and art, engineering and ingenuity, individual and collective. Above all it presumes to be a reflection and expression of an IDEA and an emotion. The germ of the idea is in the plan. The plan not only responds to the utilitarian but also to the intellectual. In the plan is the essence, the fruition of the concept.

Without the plan, you have lack of order and willfulness. The plan is the generator....the exterior is the result of an interior.

Le Corbusier in his book *Towards a New Architecture*

Is our society in such despondency that we no longer strive for advancement? Or have we become so afraid of progress that we latch onto a past that may not be even ours?

Architecture worthy of human beings thinks better of men than they actually are. Things are not universally correct in architecture and universally incorrect in men. Men suffer enough injustice, for their consciousness and unconsciousness are trapped in a state of minority; they have not, so to speak, come of age. This non-age hinders their

identification with their own concerns. Because architecture is in fact both autonomous and purpose-oriented, it cannot simply negate men as they are; yet it must do precisely that if it is to remain autonomous.

Theodore W. Adorno at the Deutscher Werkbund, 1965

ART

James M. Kise, Architect

Kise Straw and Kolodner

In 1900, the art world was centered in Paris. Pablo Picasso, Georges Braque, Juan Gris, Fernand Leger, Robert Delauney, Jacques Villon, Henri Matisse, Raoul Dufy and others moved painting from Impressionism to Cubism and Fauvism. Aristide Maillol, Raymond Duchamp-Villon, and Jacques Lipchitz gave sculpture its Cubist form.

By 1950, the center of art had moved to New York, where it remains in 2000. Jackson Pollock, Arshile Gorky, Willem de Kooning, and Mark Tobey defined American Abstract Expressionism in painting, while Alexander Calder and Richard Lippold did the same in sculpture.

We have, in 100 years, moved from Impressionism and Post-Impressionism, through Symbolism, Fauvism, Expressionism, Cubism, Futurism, Orphism, Vorticism, DaDa, Constructivism, De Stijl, Bauhaus, Surrealism, the New York School, Pop Art, Minimal Art, Conceptual Art, Post-minimalism, Kinetic Art, Assemblage, and Performance Art. It's hard to keep score.

It has also been the century when museums have replaced churches as pilgrimage destinations. While the 19th century saw the founding of a few major, great museums and also saw royal collections made public, the 20th century spawned an explosion of museums and expansions. Frequently given a reverential setting within a Classical Revival-style temple before World War II, of which our own Philadelphia Museum of Art is a supreme example, postwar museums reflect the avant garde of architecture. Blockbuster shows, timed tickets, gala openings, and popular attractions compete for the public's attention and recreation dollars. Once the province of the church, royalty, and aristocrats, art today still commands the collecting attention of an economic elite, but it has become a popular pastime for millions.

At the century's end, Frank Gehry's astonishing museum design in Bilbao, Spain, has become an international destination that perhaps eclipses the art inside. A current exhibition of sculpture by Richard Serra, whose swooping plates Gehry emulates for the museum, raises the question of what separates art and architecture today.

COMPUTERS AND THE INTERNET

Katharine Padulo **Web-site Consultant**

The printing press, because it allowed information to become widely available, is the invention of the second millennium considered to have had the largest impact on humanity. Our access to information has recently been escalated by the computer and the development of microchips. Anticipating the arrival of the year 2000, the realization that these microchips were already widely embedded spread concern that any of these minicomputers with ambiguous dates would disrupt the systems they control. To gauge their ultimate reach, it is easiest to ask: "What couldn't have a computer component in it?"

Though we may not be aware of them, all these computers need to communicate with each other---in our automobiles' fuel-injection systems, for example, or in our houses. We can program computers in thermostats, refrigerators, motion detectors, and security systems to alert both the heating system and the cooling systems when the front door opens. The computers can together assess the outdoor temperature and whether or not someone is already home to decide how to proceed: to turn up the heat, ring an alarm, suppress the refrigerator's compressor, etc.

Different kinds of computers enable us to access and process this information and to participate in the decision making. Palm Pilots are currently dispensable, but people in the future may require an appliance or tool to manage the volume of information available and may find themselves at risk without one. Possibly the World Wide Web is the prototype.

The Internet was initially developed as a convenient and secure method for communicating research data. Data were divided into many small packets to be sent separately, each labeled with the protocols for transfer at the many stopping points along the way and for reassembly at the final destination. The introduction of hypertext file transfer protocols (HTTP), allowing graphical information in addition to text, created what is known as the World Wide Web and is a natural vehicle for both inter-computer and computer-to-person communications.

With increased compression techniques and bandwidth, speed approaching real time enables voices and even movies to be transferred on the Internet. Computers are becoming more like televisions and also more like telephones, as voice recognition supplants typing. Free access to this resource, provided to their students by such "opinion-leader" universities as Penn and Harvard initially, and unmetered local calling, provided by Bell companies, have together popularized the Web seemingly overnight and changed almost everything about the way we can expect to do business and create, deploy and

use technology in the future.

As these information appliances become more like each other, easier to use, and converge on the World Wide Web, who should have access to all the information generated? With computers to organize and process information, today companies can mine data about buying patterns to decide how best to market new products. This is very helpful to them; does it pose a danger to us?

Tissue samples taken at birth can prevent identity confusion or enable perfect blood matching. And would insurance companies like to have that DNA information? You bet they would. What should be done or not done with that information? Although people usually accept some individual compromises, in order to drive on highways for example, and courts are charged with reconciling individual rights with the best interests of the larger community, the volume of data available and the ease with which it can be accessed will make such informed consent and controls difficult.

Would control of what may and what may not be computerized be more manageable? And who should make those decisions? The printing press offered a future with seemingly limitless information and answers; the computer seems to guarantee that the next millennium will be ripe with questions.

ECONOMICS

Hanley P. Bodek **President, The Philadelphia Construction Company**

The U.S.'s economic history represents, in many ways, one of the greatest triumphs of all time. Unfortunately, the entire rest of the world has not necessarily been so lucky. My thesis is that despite our country's triumphs through industrial and technological revolutions, and the degree of economic control we now have using Keynesian economics, we still, in some respects, are nothing more than beneficiaries of luck that could change at any moment.

The last 120 years saw the tail end of the industrial revolution and the beginning of the technological revolution as exemplified by a new device called the telephone, which was eventually mass-produced. The industrial revolution was really a triumph of increased efficiencies of production processes and output per person. This gave rise to a new economy that was capable of huge swings in supply and demand. One of the results of this was not only periods of boom but also bust cycles, the most notable being the Great Depression. Economists at the time believed in a balanced budget and the "long-run" positive effects of "The Invisible Hand."

John Maynard Keynes pointed out, "In the long-run, we are all dead." Keynes advocated what was considered massive government deficit spending to smooth out the periodic depressions in demand that accompany a fast-moving

and rapidly-changing economy. The Great Depression would have been a perfect opportunity to test these theories, but even President Franklin D. Roosevelt's alphabet soup of government-backed programs were reined in by Roosevelt's desire to achieve a balanced budget. The massive U.S. government deficit spending needed to win World War II is what ultimately proved Keynes's theories correct.

It appears that the only negative side of Keynesian economics is government's ability, and seeming propensity, to spend money on failed projects, such as housing for the poor, Star Wars [the U.S.'s Strategic Defense Initiative], and education.

We now find ourselves in an era of unparalleled economic growth. Capitalism has smashed communism; national companies have replaced locally-owned ones; and the U.S. is leading the world toward a policy of globalization. There is now a realization on a local, national, and global level that these trends cannot be easily controlled and trying to oppose them is fruitless. It is better to try to hitch a ride on this trend and help determine the outcome than stand in the way and be left behind.

I think that one of the necessities of globalization is that the U.S. must realize its good luck of having not only one of the most bountiful and resource-rich large areas of land on earth but also a young democracy that enables our nation's people to live harmoniously. Clearly, if our country were moved to the Sahara Desert, and if the Republicans and Democrats had a 1000-year-old blood feud, our economy might not be quite so vibrant.

With this in mind, we must realize that any number of unlucky events, related to climate, disease, act of God, etc., beyond our control, could wipe out our tradition of prosperity. Now is the time for us to lay the groundwork through globalization to practice a form of economics that is inclusive, not only to the capitalist but also to the interests of labor, the environment, and world peace. These actions could become valuable insurance should the luck of our country ever change.

LAW

R. Philip Steinberg, Lawyer
Formerly with Drinker, Biddle & Reath

The life of the law has not been logic; it has been experience.

Oliver Wendell Holmes, Jr., *The Common Law*, 1881

In 1880 Oliver Wendell Holmes, Jr. delivered a series of lectures on the common law at Harvard's Lowell Institute. Holmes maintained that law could

be understood only as a response to the needs of the society it regulated and not as a body of rules developed by legal theorists. This philosophy of jurisprudence guided the law in the 120 years that followed---turbulent years for lawyers as they grappled with wide-ranging issues that affected the development of the U.S.

Civil Rights. In 1896, the U.S. Supreme Court decided, in *Plessy v. Ferguson*, that states did not discriminate against blacks so long as "separate but equal" facilities were provided for each race. That decision set the tone for race relations for the next 60 years, as segregation became a part of everyday life in many regions of the U.S.

Through the brave efforts of a small band of civil-rights lawyers and their clients, in 1954 the Supreme Court unanimously reversed *Plessy v. Ferguson* in the famous school integration case, *Brown v. Board of Education*, which led to a series of decisions that brought equality of treatment for blacks and other minorities. Time and again during the 1960's, Martin Luther King, Jr., turned to the courts for the protections and liberties that minorities were denied at the hands of our government officials. This effort is a continuing one and has involved many distinguished Philadelphia lawyers.

Right of Privacy. In 1890, two bright young lawyers, Louis Brandeis and Samuel Warren, published an article in the *Harvard Law Review* entitled "The Right of Privacy." In this article, the authors articulated for the first time the right of an individual to protection against invasion of privacy for commercial purposes. The courts have long accepted the existence of this right. Today, however, this right is in greater jeopardy than ever through the use of electronic communications that are part of our daily lives.

Separation of Church and State. Many Pennsylvanians attended public schools in which each day began with the reading of verses from the Bible. In a case argued before the U.S. Supreme Court by Henry W. Sawyer, III, a Germantown resident, the Court in 1962 declared unconstitutional the ceremonial reading of the Bible and prayer. In a second case argued by Mr. Sawyer in 1971, the Supreme Court declared unconstitutional public aid to parochial schools. In recent years, religious groups have attempted, without success, to reverse these decisions by legislation or constitutional amendment.

Increase in Number of Lawyers and Law Firm Size. Since 1880 the number of lawyers in the U.S. has grown dramatically in relation to population, and women now make up a large proportion of lawyers throughout the country. For example, in 1900 when Philadelphia's population was 1.3 million, there were approximately 2,500 lawyers practicing in Philadelphia (99.9 percent of them men), or one lawyer for every 520 persons. One hundred years later, when Philadelphia's population is about 1.5 million, the number of lawyers has grown to more than 10,000 (over 25 percent of them women), or one lawyer for

every 150 persons. The size of law firms has increased from a maximum of five or 10 attorneys to firms of hundreds with a variety of specialized departments.

The Future. As Oliver Wendell Holmes stated, the law must adapt to societal changes. The rapid growth of the Internet and the global economy require that this adaptation be done quickly and without disruption to the transaction of business. The law has accommodated the shift from an agrarian to a technological age in the 120 years that our Club has been in existence. By continuing to learn from experience, the law will be ready for the challenges that are sure to come in the next 120 years.

LITERATURE

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In recent years, we have been goaded into new literary directions, authors, places, and topics.

For instance, Latin American literature. You have to relinquish our notion of time as linear, because their work has vertical time, jumping back and forth from the present to the past and on to the future in a disconcerting way. *One Hundred Years of Solitude* often shows up on lists of important 20th century books, even though Gabriel Garcia Marquez himself is not welcome in the U.S. *Aunt Julia and the Scriptwriter* by Mario Vargas Llosa is funny and a good example of what is called "magic realism."

Not that we neglect magic and fantasy. A little boy called Harry Potter went to wizard school, and his adventures, in three volumes, have long been on the New York Times best-seller list, worthy successors to Mary Poppins and Alice in Wonderland.

For those who enjoy reading about both obscure and tourist destinations, there are Halldor Laxness's *Independent People* about Iceland, Milan Kundera's *The Unbearable Lightness of Being* about the Czech Republic, Nadine Gordimer on South Africa, and Paul Bowles's *The Sheltering Sky* on Algeria. And you can't go wrong with a Booker Prize novel about Great Britain.

As far as content is concerned, books are getting less subtle. Can you imagine a contemporary description of the thoughts and machinations of those Jane Austen women who are as enamored of money as any Wall Street tycoon? Or the explicit description of a love scene (after marriage, of course) between Elizabeth Bennet and Mr. Darcy? A modern example here would be censored out for Science and Art members.

Biography and autobiography we have been having aplenty, from Jill

Conway's description of her relationship with her mother as she grew up in Australia, through minute investigations of the F.D.R. marriage, to the rush-into-print life stories of the likes of O.J. Simpson and Monica Lewinsky.

The most visible change in recent years is the metamorphosis of small bookstores whose employees actually read books into supermarkets whose employees depend upon computers. They outdo each other in discounting popular books; obscure ones remain obscure and are remaindered unless Oprah, the TV personality, recommends them for her "book club." Amazon.com, the online retailer, will ship you a book so that its discount price plus the cost of shipping may be less than the publisher's price, and you don't even have to go to the bookstore. Publishers, we are told, are now part of huge conglomerates that watch only the bottom line. There are no more editors like Maxwell Perkins, who could subsidize the likes of F. Scott Fitzgerald through his early scribbles, secure in his conviction that Fitzgerald would one day write a great classic. He did, of course: *The Great Gatsby*.

MEDICINE

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In the 1880's, there were new breakthroughs in the prevention and/or treatment of several infectious diseases---tetanus and diphtheria, for instance. In surgery, the teachings of Joseph Lister based on the fundamental work of Louis Pasteur were just taking hold and introducing first antiseptic and then aseptic surgery. This permitted the opening of the abdomen for the removal of infected appendices, a great variety of malignant tumors, and gallstones, for instance.

In 1910, chemotherapy effective for syphilis was introduced followed by a long effort to find chemotherapy for other infections, which culminated in 1934/5 in the discovery of sulfanilamide. This was rapidly followed by similar compounds and then in 1939 by penicillin and the ensuing antibiotics.

Early in the century, typhoid fever was nearly stamped out by the improvement of water supplies.

Vaccination against mumps, measles, chickenpox, and German measles as well as tetanus became widely practiced with an enormous reduction in pediatric death rates.

Following the discovery of penicillin, streptomycin was discovered by Selman Waksman at Rutgers University and was soon found to be effective against tuberculosis. With that and certain other medications, this has been almost wiped out and certainly greatly reduced. It used to be described as the

"Captain of the Men of Death" or as the "White Plague." It still occurs and strains of the tubercle bacillus have emerged that are resistant to the earlier therapies. However, relatively few patients in America are still dying of tuberculosis.

Early in this period, the transfusion of blood was made possible by the discovery of blood types. In the 1930's, blood banks were started, and both of these developments greatly improved the treatment of hemorrhage and shock.

Also in the 1930's, Miller and Abbott developed a two-lumen tube that could be passed completely through the normal gastrointestinal tract and was proved useful both in the diagnosis and in the treatment of obstruction of the bowel. Starting in the 1930's and culminating in the 1950's were the studies of John Gibbon, who developed the artificial heart/lung apparatus, which opened the door to intracardiac surgery for valvular disease and other abnormalities and to bypass surgery for coronary-artery stenosis and for heart transplants.

Late in the 1950's, organ transplantation began first with kidneys, then livers, hearts, lungs, and pancreases. The development of the artificial kidney by Willem Kolff came earlier and made it possible to maintain patients with renal failure until a donor kidney became available.

In orthopedic surgery, alloys were introduced that were tolerated in the body and permitted the replacement of hip joints, knee joints, and other joints. Successful treatments for tic douloureux were developed by Charles Frazier and Peter Janetta. Improved methods of treating increased cranial pressure were developed; some brain tumors have been successfully removed; and the treatment of intracranial aneurysms has advanced dramatically.

In vascular surgery, aneurysms of the aorta can now usually be treated successfully. Stenoses of the internal carotid arteries leading to stroke can be opened up, and vein grafts have been introduced to replace narrow segments in arteries affected by arteriosclerosis, with considerable reduction in the indications for leg amputation. Just as streptomycin and other drugs have almost wiped out tuberculosis sanatoria, so the psychotherapeutic drugs have affected institutions for mental diseases resulting in closing beds and entire hospitals.

New breakthroughs such as gene therapy are being explored.

In the 1960's, the problem of getting enough nutrients intravenously to not only maintain the needs of traumatized and postoperative patients but also to restore their deficits was finally solved by two methods in the U.S. and another in Sweden. This permitted a striking reduction in mortality of certain newborn abnormalities and infections in young children.

Tremendous credit must be given to improvements in public health, which assure pure-water supplies, pure-milk supplies, and the eradication of certain insect vectors resulting in the near-disappearance of malaria and some other tropical diseases.

While it has not been possible to touch on nearly all of the important advances in medicine in the last 120 years, it has been estimated that while the average length of life at birth had increased 25 years, based on evidence dating back 125,000 years, until 1900, a somewhat greater increase (30 years) has been added during the 20th century, as life expectancy at birth is now approximately 80 years.

Attendant social changes in this country involved the introduction of health insurance of the Blue Cross/Blue Shield type in the late 1930's and the introduction of public-health insurance under Medicare and Medicaid in the 1960's. This is part of a worldwide trend toward government-supported medical care for all persons. In the U.S., we still have a large uninsured group. Two significant trends have been a shift from office practice to hospital-based practice and from solo practice to group practice.

A major factor in the lengthening of life expectancy has been medical research, both federally-financed, privately-financed and commercially-financed. All of this has been increasingly expensive, but this is not surprising as the purpose of medical research is to increase our power to turn dollars into life.

PSYCHIATRY

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The history of psychiatry and mental illness, particularly in the past century, is a fascinating subject, with Philadelphia's central role of particular interest to us. The ancient Greeks were acute observers of nature and human behavior. Writings traditionally ascribed to Hippocrates in the third century B.C. clearly described the major mental illnesses. Ancient treatments including cathartics, herbs, restraint, and talking were not very different from treatments used in 1751 when Benjamin Franklin and Thomas Bond founded the first hospital in the country, Pennsylvania Hospital for the Sick and Injured. The second patient admitted was mentally ill, beginning a dedication to the humane treatment of people with mental disorders for which the hospital became widely known.

As patients with mental illnesses outnumbered all others, in 1841 Pennsylvania Hospital built a new hospital on farmland west of Philadelphia (at 49th and Market Streets), eventually known as the Institute of Pennsylvania Hospital. The hospital's superintendent, Thomas Story Kirkbridge, helped found the American Psychiatric Association there in 1844. He was the architect of the building bearing his name, which was designed to provide a sunny,

roomy, private setting for mental patients. Many state hospitals copied his structure, and it is in use to this date.

Psychiatric treatment did not make many more advances until Sigmund Freud's work in the 1900's, which uncovered the manifestations of the unconscious mind and founded the talking therapy of psychoanalysis. This therapy, with variations, was humane and effective. As interest in psychoanalysis grew, the strength of the debate about the role of nature versus nurture in human development also grew.

The debate was especially important in psychiatry because the mental disorders had never been found to have a physical cause. In fact, the absence of a demonstrable physical cause separated the specialty of psychiatry from neurology. Freud's treatments emphasized and targeted the early experiences in an ill patient's life. Because his work was so popular and the treatments were effective, nurture received most of the attention from clinicians well into the 1970's.

Meanwhile, evidence was starting to mount that the biological basis of mental disorders had been underappreciated. In 1949, Australian John Cade showed that lithium salts, similar to table salt, specifically controlled the symptoms of mania. Lithium was quite toxic, however, and was not on the market in the U.S. until 1970, when enough was learned about its safe usage. In the early 1950's, a French surgeon noticed the "tranquilizing" effects of a new antihistamine named chlorpromazine (Thorazine). Psychiatrists saw striking benefits for psychotic patients from treatment with chlorpromazine, and for the first time in history there was a steady decline in the number of hospitalized psychiatric patients. The development of effective antidepressants followed by the discovery of anti-anxiety agents started to persuade psychiatrists that mental illness was more than the product of childhood events.

Genetic research, much from the University of Pennsylvania, made the case for a genetic and biological basis for mental disorders. Imaging studies from the university in the late 1980's showed, for the first time, that there were physical differences in the brains of people with some mental illnesses.

The National Institutes of Health made the 1990's the Decade of the Brain in research. During that decade more money was invested in brain research than in all other areas of medical research combined. More information was discovered about brain functioning during this decade than in all of preceding history.

We are still digesting the discoveries of this decade, but science is on the verge of bridging the mind-brain dichotomy. The nature versus nurture controversy of the last 3,000 years should soon be settled.

SCIENTIFIC RESEARCH

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It is interesting to reflect on the enormous contrast between the way science was done in the late 19th century and the way that it is done today, especially with regard to funding.

In those former times, science was done by individuals, usually scholarly gentlemen, who had to rely either on their own or a patron's wealth or on the income from a job for both their living expenses and any equipment that they needed. Perhaps the best-known example was Albert Einstein, who did his most famous work while working at the Swiss patent office. For experimentalists, equipment had to be constructed in one's own laboratory, not only for reasons of cost, but also because there were no sources of laboratory equipment at that time. Moreover, the equipment was often unique and was being invented on the spot. Scientists with teaching positions at universities often had access to laboratory space and support staff, but those who did not were on their own. There was no such thing as writing grant proposals to fund research.

SOME UNRESOLVED QUESTIONS OF SCIENCE AND ART

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Our monthly meetings of the Science and Art Club over the years frame two thoughts for me. I do not know whether these have always been so, or whether they are truly something fairly new.

We cannot separate science from art. When people say, "Medicine is an art," they often mean that the diagnosis was wrong or that the operation did not work. In this observation, science is supposed to be "true," i.e., replicable, and art is seen as personal, subjective, and not subject to external criteria. One wonders whether the separation was always false or whether there is something new about the advances in modern science and the philosophical arguments over their implementation as well as their assumptions. In both science and art we deal regularly in metaphor.

Issues around science and art are increasingly religious and political. Given that the bylaws of our 120-year-old organization prohibit discussion of religion and politics, one wonders whether the earliest members were wrong or whether today's music, painting, and writing are more directed to rethinking the structures of society than before.

Perhaps we have put too many constraints on ourselves, changing discourse into "Question and Answer" time. If the borders of science and art are now (and always have been?) fluid and if we surely do not wish to become obsolete, we can direct our time together to what is new and ask, "Science and art---to what ends? In the service of what and whom?"

TECHNOLOGY AND ENTREPRENEURSHIP

William Zucker, Ph.D.

**Meshulam Riklis Professor Emeritus of Creative Mangement
University of Pennsylvania**

When The Science and Art Club of Germantown was formed in 1880, Philadelphia's industry and society was at a cusp. The employment and economic drive were devoted to heavy industry. Factories lined the railroad tracks; financial wherewithal was poured into that future. In a century of heavy industry, employment skills were primarily manual, and the City and region specialized in steam locomotives, railroad cars, hosiery, clothing, white goods, electrical products, and the ingredients essential for their growth.

Today this region is at another cusp. We are part of the Rust Belt with empty factories, which are a source of fires. Employment is declining, and whole neighborhoods with decaying housing are giving rise to crime, drugs, dirt, and despair. Homelessness is a common sight on our streets.

The members of our Club have seen it all and with vision and determination can make this a time of opportunity for the City and its population. Philadelphia, throughout its history, has been able, nay, willing, to rise to the challenge that the future demands. And why should we be so willing to face the next millennium? Because we have the ingredients within ourselves on which to build a new future. Certainly, not one that is generated by the old and found wanting by the American economy, but rather by reinventing the City and the region to meet the upcoming needs of the community.

We should build the city of the future based on the economic needs called for by the future. Where can we excel and how?

In Medical Technology. With five medical colleges doing research and clinical treatment by our hospitals along with pharmaceutical companies designed to attack the medical problems of today: cancer, heart disease, AIDS, gerontology, to mention a few.

In Education. With a diversity of colleges and universities to bring new and, if need be, radical programs for the teaching of our young. Manual skill may have been important, but math and science have taken over from those skills. Efforts must be taken to hold on to our newly-minted educated young,

whether they are in the professions, science or the arts, rather than lose them to other locations.

In Cultural Improvements. Theater, music, dance, and the graphic arts are what attracts the young and the old to make the area an exciting community. Throw off the mantle of complacency and dare to be new and different.

In Entrepreneurship: Develop private- and public-funding sources for entrepreneurial investment as it was in the last century. Creativity should be the password.

These opportunities are but some of what needs to be done. Build on the start of Philadelphia as a center for food and innovative restaurants for this City to be the "Lyon of America." To harken back to our history as a standard of measurement, not merely to be replicated. To attract tourists with all that the City offers---its architecture, old and new, neighborhoods and the historic portions of the City. To make Philadelphia a destination, not merely a visit and a glimpse.

These are some hopes. Will they be accomplished? Indeed. It will take time, effort, leadership and money. It will require the cooperation of the public and private sectors to resurrect what those previous visionaries saw for Philadelphia when it led the nation in its parks, prison reform, fire control, higher education, medicine, and the arts.

The next millennium should be a great one for Philadelphia, and it will be, with the diligence and leadership of those of us who follow our fellow Club members of the previous 100 years.

WAR AND PEACE

Stephen G. Cary, M.A.

**Former Chairman of the Board of Directors
American Friends Service Committee**

More than 50 years ago, I was given the responsibility for overseeing American Quaker relief in Europe in the wake of World War II. For two years, I lived each day with numbing tragedy and suffering and devastation. It changed my life. I have been driven ever since to work directly, even if modestly, to strengthen peace and widen justice. Out of this experience, sometimes amidst violence or oppression or abject poverty, I have reached judgments about our human predicament that seem worthy of reflection. Let me share two.

The first is that the role of arms in providing security has been fundamentally altered in the last half century. The timed-honored formula that

many nations have employed to preserve peace and stability in an imperfect world has been to create a force sufficient for defense against aggression, behind which there would be opportunity for civilizing processes to go on. This was the concept that George Kennan projected in his *Foreign Affairs* article that became the basis of President Harry Truman's Containment Policy. Our military power was to block communist expansion while the U.S. sought simultaneously to expand the horizons of peace and justice around the world. The two components were seen by Kennan as complementary and were to be kept in balance.

It hasn't worked out that way. There has been no balance: the military component has overwhelmed the justice component. Why? Because in a nuclear age and in a world seething with injustice, the demands of military security have become virtually open-ended. In our nation, they have so preempted our hearts, our energies, and our resources that we have been unable to give important attention to the great issues of poverty and hunger, of education, development, and the environment, on whose solution peace ultimately depends. Too often have I seen justice denied become the seedbed of violence. We think to operate on both fronts, but we cannot. If there is ever to be peace, we must find an alternative to militarism as the path to security. There is no other option.

The second judgment that I think needs reflection is the impact that our power is having on us. I think there is a high, but largely unrecognized, price that is being paid by all Americans for our continuing commitment to amassing and wielding great power and sanctioning its use, always in the name of justice and freedom.

Simone Weil, the French essayist, in "The Iliad, A Poem of Force," writes about violence in these words:

Its power of converting a man into a thing is a double one, and its application double edged. To the same degree, though in different fashion, those who use it, and those who endure it, are turned to stone.

This happens to people and nations with vast power. In subtle and insidious ways, repeated exposure to violence conditions us to accept it and the agony it produces ever more easily. We lose our capacity to feel horror, which is itself the ultimate horror. Think back to the sense of outrage that swept our land when the Luftwaffe attacked Rotterdam. But somehow, between Rotterdam in 1940 and Dresden in 1945, the outrage disappeared. The incineration of 60,000 men, women, and children in that lovely city caused hardly a ripple. And the same lack of concern continues to insulate us. How many are troubled by the deaths of 3,000 Iraqi children every month because of U.N. sanctions? We live in a culture of violence and are becoming numbed by violence.

When feelings of compassion are drained from a people, and when the agony of violence is no longer troubling, arrogance blossoms. These trends in our society are what lead me to the troubling view that the real crisis of our time is not the clash of ideologies or the aggression of rogue states but the illness of the human spirit.

WOMEN

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At the beginning of the 20th century, most women married, had their first child by age 22, their last at 32, and a life expectancy of 51 years. The arduous work of childrearing and housekeeping took up most of their lives. Although 20 percent worked outside of the home, 60 percent of these worked as domestics. A privileged minority attended colleges and universities, but in the east, prestigious universities like Harvard, Yale and Princeton barred their entrance.

By 1920, when my mother was five, an organized phalanx of female reformers had pressured state legislatures and the U.S. Congress to pass hundreds of child-labor, women's-equity, and social-welfare laws and the 19th Amendment, which gave women the vote. This plus women's experiences working during World War I as street-car conductors, engineers on trains, and in construction crews and steel factories should have created a broad feminist movement. Instead, women became the targets of advertisers who glamorized staying at home and buying new household products. Even educated women aspired to the role of wife and mother. Progressive reforms lagged. It was apparent that most women were more interested in short skirts, cigarettes, sexual freedom, and the turkey trot than they were in feminism.

I was born in 1937, the year that Amelia Earhart took off on her historic flight. By then women had won the freedom to compete in organized sports, to wear comfortable clothes, and to expect sexual fulfillment. Still, birth control was unreliable and prohibited in many states because of the Comstock Laws (1873). Thirty percent of women were employed outside the home, one in five of these was married, and one fifth of employed women worked in clerical positions. Advertisers still saw women as their primary customers and told them that the best way to cope with the Great Depression was to protect their children with hot cereal and their nerves with aspirin. If they used Pond's, their soft hands would get them husbands, and Woodbury shampoo would bring them sleek hair and romance.

By the 1950's, when I married (at the age of 18), marriage and motherhood were still the major goals of most women, with the majority marrying at 20 and

having their last child at 26. About 30 percent of the work force, women continued to work as nurses, teachers, secretaries, sales clerks, and librarians. Although restrictions against women in medical and law schools had been abolished, women made up less than 10 percent of the enrollment in these schools. Women continued to be barred from male colleges, unwelcome in the professions, and except for Oveta Culp Hobby, Secretary of Health, Education and Welfare in President Dwight Eisenhower's cabinet, and Senator Margaret Chase Smith of Maine, most were absent from public life.

In 1960, about 90 percent of women worked outside the home at some time in their lives. But while women's rate of employment had skyrocketed from 1930 to 1960, the proportions of women in the professions had declined from 45 to 38 percent. In 1966, by the time I had my last child at the age of 27, the publication of Betty Friedan's *Feminine Mystique* and the introduction of fool-proof birth-control methods changed the playing field for women. Energized by a spate of feminist books, journals, and consciousness-raising groups and able to plan families, women began to demand equality in education, the professions, and public life. The 1960's and 1970's were great years to be alive and to be working for women's equality. Gradually, the doors that barred women from prestigious universities and from public and professional life came tumbling down under the pressure of a women's movement and the support of state and national legislation.

In the 1980's women had gained most of their major goals. Legal discrimination was a thing of the past even though the states have yet to adopt the 1973 Equal Rights Amendment passed by Congress. There were so many gains that it would be impossible to note them all. Among the most noteworthy: Sandra Day O'Connor became the first woman to be appointed to the U.S. Supreme Court, and Geraldine Ferraro ran as a vice-presidential candidate. Women now comprise 50 percent of law-school and medical-school classes. In 1999, 65 women were serving in major state elective offices; nine women were in the U.S. Senate, and 58 in the House of Representatives. Over 90 percent of women work outside the home. However, according to the Department of Labor's Women's Bureau, the majority of these still work in typically female positions such as secretaries, nurses, and elementary-school teachers.

So where are we now? Women are still marrying, although the median age of marriage has risen to 23, and their last children are often born in a woman's forties. Women are living healthy, productive lives into their seventies, eighties, and beyond. As I look at my granddaughters, I realize they have opportunities that I never dreamed of. The challenge for them, and for all of us, is to take advantage of those opportunities and utilize them to improve the lives of their sisters and brothers in the 21st century.