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Summing Up

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Why I Became a Scientist

I grew up inside an experiment, Bryn Gweled Homesteads, an intentional community (i.e., one designed for closer communal living) near Philadelphia that my parents helped found in the late 1930s. This community was part of the social ferment of that era: It was interracial and interfaith (although many were Quakers, like my parents). All the land was owned in common. The forests and trees were set aside as common land. Each family built their own house, sometimes with their own hands, and many, like my family, grew most of their own food. When the “Let’s live together and grow peace and vegetables” era of the 1960s arrived, I felt right at home! Bryn Gweled is still going strong, with about 80 families in it. Much of who I am was formed there.

Bryn Gweled influenced me in so many ways, for example, the concept that our own lives, as well as how we live our lives together (i.e., our social covenant), are experiments under our control. The access that I had to many homes gave me many adult role models. The community attracted a varied group of talented, intelligent, and interesting members, often with strong opinions. With such a membership, the community’s “town meeting” form of governance prepared me well for a life of faculty meetings! Since my parents were not at all scientifically oriented, it was lucky for me that three of the community members were models of excellence as engineers and scientists: Gordon Fredendall and Alfred Schroder, who were developing color television, and Edward Ramberg, who was improving the electron microscope, all at RCA Princeton Labs.

It was not unusual, in this environment, that I soldered together a one-tube regenerative receiver in second grade. My first radio reception was of the surrender of the Japanese aboard the battleship Missouri.

Kids were important in the community. There was a long list of activities, from archery to zoology, run by the parents. The interactions among the kids were strong: We formed a community within the community. We learned about electricity by experimentally discovering how to tap the phone system. We found that, if we connected a set of headphones across a line in the connection box hidden in the bushes, we could tap out a phone number by shorting the line the proper number of times. Then both phones would ring, one on the line we had tapped and the other the one we had “dialed”. We would listen in on the conversation as both community members tried to figure out what had happened!

It was a place where adults encouraged kids to do things. A place where kids collected things, rocks and butterflies in my case. Kids named things, for example, calling the local tall grass “bumble-ditty” and the adults picked up that name. Kids repaired things, like bicycles and garden tractors and lawnmowers, and, therefore, figured out how they worked. People made things, like the stained-glass artist who lived across the road from us; like the families who grew, canned, and froze their own food; and like the families who built part or all of their own houses. We kids just learned, without having to *study*, about how mechanical and electrical things work and about the lives of plants and insects.

My mother, Miriam Wilson, was warm and loving. She taught every grade from second grade through college, where she had been queen of May, valedictorian, class president, and, later,

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dean of women, before becoming a teacher at a missionary college in Egypt. She gave me the confidence to find my own path in life. My father, E. Raymond Wilson, was more emotionally reserved. He was an exceptionally fine speaker and had an encyclopedic memory, which, unfortunately, I did not inherit. He dedicated his life to saving the world, helping found and leading a Quaker lobbying organization in Washington, D.C., working on what he called "lost causes" like disarmament, civil rights, and feeding the hungry. I spent a lot of my life either rebelling against him or trying to prove something to him to gain a direct expression of his love. My brother, Lee Wilson, is eight years younger and a computer whiz in Washington, D.C.

My parents were very hardworking, having grown up on farms in Iowa, with chores before breakfast, six long days of work each week, and chores in the evening. They never had much cash money at any time in their lives, but looking back, I never felt that we were deprived of anything important. The Quaker tradition in which I grew up was one of doing what you believed was right, of going one's own way, independently of others' opinions. This was good training for being a scientist, as well as for being a stock market speculator.

I was a rebellious kid, stubborn, not well socialized, passionate about learning, disorganized. I must have been a trial for my parents, but their Quaker tradition inhibited them from expressing their negative feelings. They were very tolerant of me. In my mother's diary, she comments on answering a hundred questions a day from me as a preschooler. They let me, in grade school, take everything apart: clocks, radios, mixer, stove, washing machine. I'm sure it worried them, but this allowed me to develop the confidence that I could put things back together, repair them, and eventually make them work better.

Several books that I read early in grade school made a profound impression on me and helped turn my interests toward science. I still have *The Wonder Book of Science*, which begins with "The Magic Carpet of Science" and continues with exciting chapters such as "Atoms and Molecules in Movement", "How We Feel, Smell, Taste and Hear", and "Instinct and Reasoning". It is inscribed "To Kent, with love from Alison—This is the 'speriment book'." From the inscription, and my memory, I think I received it in about second grade. I still have a hard time putting it down, as the chapters, by assuredly eminent scientists (they have lots of initials after their names), are such a compelling combination of clarity, simplicity, and interesting subject matter. The book is filled with illustrations, as well as with descriptions of experiments that stirred me to action, producing many messes in our kitchen, basement, and garage. My heart still leaps when I think of the experiments that I did making magnets, motors, and generators. I also remember with joy a two-volume *History of Flight*, which, I imagine, my father found on some bookstore's remainder table. I received this also at a very young age and poured over the many pages of text and of illustrations going back to da Vinci, enthralled by the cleverness of the mechanisms, the daring of the experimenters, the excitement of flying.

I was very influenced by museums and libraries. At every opportunity, I dragged my nonscientist father to the Franklin Institute in Philadelphia, where one could actually move the knobs and do experiments in chemistry and physics. I could not get enough of it, and the Franklin Institute enthralled me to this day. It still thrills me to run the exhibit that electrolytically splits water into hydrogen and oxygen and then makes water again with a spark and a bang. After we began to spend the

winters in Washington, D.C., where my father headed the Friends Committee on National Legislation and my mother later taught at a Quaker school, Sidwell Friends, my opportunities broadened. I spent so much time in the many museums of the Smithsonian Institution and in the Library of Congress that I may have learned more there than in school. It was so exciting for a junior high school student to have access to the world's store of knowledge. I gladly wrote 50-page-plus papers on subjects such as "Computer Circuits" and the "History and Art of Fireworks", the latter involving much experimentation with bombs and rockets, surely a sign of rebellion against my pacifist parents. I did very little of the assigned homework in school, and I am sure that my passionate love of learning at museums and libraries saved my academic career from ruin. I know from experience that great museums and libraries can change lives.

Mentors

I was also strongly influenced toward science by several key mentors: teachers, professors, and friends. I was fascinated in fourth grade at Sidwell Friends by the biology course given by Dr. Ashton. We dissected frogs and chickens. I particularly remember cutting up a cow's eye that Dr. Ashton had obtained from the slaughterhouse. When I think of her, I think of her kindness and her wonderful combination of interest in us and in science. I was also very influenced by John Terborgh, now professor and codirector of the Center for Tropical Conservation at Duke University, with whom I went to school from fourth grade through graduate school. John was fascinated by reptiles and began subscribing to a major journal, *Herpetologica*, in fifth grade. He took me on snake and turtle collecting expeditions in the swamps around Washington, and showed me by example what it meant to be serious about science.

Moonshine and fireworks made me a chemist. In high school, my chemistry teacher was wise enough to give me the freedom of the lab, thereby capturing my heart. In those days, there was a huge inventory of surplus World War II equipment available to schools for the asking. I got hold of a large glass carboy and a glass still and set out to make moonshine. Our teacher swore us to secrecy as I passed around paper cups to the class. The guys all claimed it was delicious, despite the foul taste from the rubber tube I used to tap off the hot alcohol.

I was crazy about fireworks. My chum, Bill Parks, who was the son of a general and destined for West Point, and I accumulated by purchase and manufacture a large arsenal of fireworks and rockets, along with a cannon made from a brass bedpost, which had to be quickly hand loaded with an already burning cherry bomb and a shooter marble. One day the high school building filled with evil smelling smoke and had to be evacuated. The principal called me in and said, "I cannot prove it, Kent, but I'm sure that you did it. I'd like to offer you a bargain. If you will promise me that you will not cause any more 'chemical problems' at school (this was not my first offense), I will offer you a safe place to set off your 'chemical experiments'." I agreed, and a school official, who was much disliked by my schoolmates, was assigned the task of carrying out the bargain.

The next Saturday, I met the official with my suitcase of bombs and rockets, largely made in my basement lab. He took me to the far side of the most distant athletic field, where I assumed I would be allowed to set them off. Instead he pulled out his pocketknife and began to cut open my carefully made pyrotechnic devices and dump the powder on the ground. The pile grew, and when he reached into his pocket and pulled out his cigarette lighter, I backed away quickly, just before he

vanished in a cloud of smoke and flame. On Monday, when he appeared with bandaged hand and arm, I was a school hero. I now knew chemistry was useful!

I never felt at home in high school. There was only one acceptable way of being, and that was not me. Harvard College was a wonderful change. I felt an acceptance of diversity, that there were many ways to be an "excellent" person, that I was free to be me. I was surrounded by students and faculty who also felt that knowledge and understanding were important and who also had a passion for learning.

Although I have concentrated in this biography on my early scientific passions and activities, I was equally passionate about history and political science and came to college quite undecided about which path to take, social sciences or natural sciences. I became a government major and thoroughly enjoyed that field for my first two years. At the beginning of my junior year, I took my first college chemistry course, from Professor Leonard Nash. There was a lab contest, in which we were given 10 test tubes with 10 different liquid solutions and a list of 10 names of solutions. With little else to work with other than some empty containers, we had to devise a way to link the names and the test tubes. I was able to quickly devise ways to assign eight of the solutions but was left with NaCl and KCl solutions and no chemical means to distinguish them. I was sure that my assignment of the rest of the solutions was correct, so I tasted the two remaining and handed in my answers. Professor Nash congratulated me on being first with the right answer list, but asked how I had distinguished NaCl from KCl. He did not like my truthful answer and reopened the contest. It took an additional hour and some hints before the answer he wanted was given.

At the next class meeting, to which I had brought my Radcliffe girlfriend, he placed the contest prize, a copy of the *Handbook of Chemistry and Physics*, upright on the lab bench. He said that he had a difficult problem, that Wilson had quickly gotten the right answer, but by a potentially dangerous method, and that "Smith" had gotten the correct answer, but had taken an hour longer and required hints. What to do about the prize? Surprising us all, he reached back for the fire axe and swung it to neatly split the book in two, handing half to each of us. I was crestfallen, my prize ruined, my girlfriend unimpressed. Then, to perfect effect, after waiting just the right amount of time, he reached under the lab bench and took out two new copies of the *Handbook*. He had captured me. I switched my major to chemistry and physics. I spent the next two years rarely seeing daylight as I worked to complete all the requirements, sometimes simultaneously taking two labs which met at the same time in different locations.

The highlight of those two years was physical chemistry. I looked at the list of lab experiments and did not think them very interesting, so I complained to the head TA. I shall forever be grateful to him because, instead of throwing me out of his office for being an arrogant pest, he politely suggested that perhaps I might like to meet Professor George Kistiakowsky to see if there was a more challenging option. The end result was a wonderful experience with three other undergraduates, working together in the Kistiakowsky laboratory, doing real science, surrounded by graduate students. One of the other undergraduates was Jared Diamond, who became a close friend. The four of us together published our first scientific paper. This experience directly led me to having undergraduates as a key part of my own group, which has been one of my favorite parts of being a professor.

The teacher with the greatest influence on my life is certainly

my graduate and postdoctoral mentor, Dudley Herschbach. After college, I went to France for a year at the University of Strasbourg to try to figure out, after the first half of my undergraduate years in the social sciences and the second half in the natural sciences, who I wanted to be for the rest of my life. I split it down the middle while there, studying and writing a thesis in economics, and publishing its essence in a French journal. After much soul searching, I decided that it was easier to be a scientist and dabble in the social sciences than the other way around. Therefore I applied to Berkeley for my Ph.D. in Chemistry.

It was a life-changing stroke of luck for me that Dudley, who is only five years older than I, joined the Berkeley faculty at the same time as I arrived. Once I heard about him and met him, I knew I had to work with him. His combination of intelligence, knowledge, vision, clarity, and enthusiasm was compellingly enticing to me. In retrospect, I do not see how I could have made a better choice. The unexpected bonus was the privilege to be part of the group of superb grad students and postdocs whom Dudley attracted. Only after I left the group did I fully realize how important it was to be surrounded by wonderful scientists such as Dick Zare, Jim Kinsey, and so many others, and what a special time and place it had been. It is one of the great gifts of my lifetime to have spent my graduate and postdoctoral years working on those seminal crossed molecular beam experiments and their interpretation, with Dudley as a mentor and his group as companions.

I have continued to be a scientist, because this has allowed me the freedom to be an adventurer and a pioneer, to explore previously untouched and unknown landscapes, to move out in many diverse directions from the "central science", to have visions, and to try to both foresee and create the future. I have been lucky to be inside a tolerant department that has allowed me to chase my personal rainbows, from experiment to theory and back to experiment, and in and out of so many fields. I know that my colleagues sometimes wondered and worried about my many wanderings, but they allowed me to run free, and that freedom has made it all worthwhile.

My Joys

My family and personal friends are central to my life and my joy and are very dear to me. But here I will say only a little about them, because this is the place to focus on the science side of my life. My wife of 32 years, Lana, is a well-known potter, teacher, writer, and giver of workshops. She is my closest friend, my love and partner. She is full of fun and spirit, and keeps me balanced and in line. Both of our daughters, Tasha and Maya, have returned to Lana's and my parental roots for their work lives, focusing on trying to help others and on making this a better world. Tasha is a social worker, and has worked mainly in Spanish in New York with children with shattered lives. Maya has focused on nonprofit organizations, working for social justice and women's issues, and is starting a Master's in Public Policy. I am very proud of them all.

The freedom to passionately pursue what interests me has been for me the foundation of a joyful life. Chemistry has served me well as a home from which to venture forth, to carry out research and to publish, not only in chemistry but in other fields, including physics, biology, economics, engineering, computer science, environmental science, archaeology, and filmmaking. I have loved physical chemistry more by having had the freedom to adventure beyond it and, then, again return home. I am convinced by these adventures that our limitations are usually inside us rather than boundaries set by others.

Those times are so precious when we feel we are a pioneer, that we are walking in a new and untouched Eden, when we have that “aha” feeling and know the joys of creation and discovery. These have been highlights of my life: Being a part of Dudley Herschbach’s group while we developed the field of crossed molecular beams, surrounded by a virgin forest of possibilities. Being inspired by Dick Zare’s thesis and developing photofragment spectroscopy, as a beginning assistant professor. Being a pioneer in computer animation and virtual reality and touch interaction with computers. Making science films with computer animation, with dancers, with music and seeing them used in so many high schools, colleges, universities, and medical schools. Discovering the weekday-weekend effect, that while air pollution reactant emissions are lower on weekends, the oxidant product concentrations are on average higher. Seeing the match between lead isotope ratios and style in ancient Nigerian “bronzes.” Mapping parts of economics and physics onto each other and applying this to figure out how to make rational decisions in stock markets around the world and playing this game almost alone as a foreign investor in the early days in so many developing countries. Seeing theoretically the dynamics of how chemical reactions happen in solution, the connections between gas phase and solution phase dynamics, the magic of how well the Generalized Langevin Equation works. Exploring quantum control and building a feedback quantum control machine to automatically find optimal laser control pulses. After so many years of development, at present watching directly the atomic dynamics in matter using ultrafast X-ray diffraction and ultrafast X-ray spectroscopy, and seeing the match to theory. Our current work with exploring cells as machines, seeing how well nonlinear optical microscopies allow one to look inside and watch what is happening, without killing the cells. Being an explorer, and then moving on further into the forest when I could see the “smoke of others’ houses”.

Having grown up in an intentional community, and having had a long love affair with both the social and natural sciences, it is understandable that, for me, my research group has always been a social experiment. Despite my fascination with learning and research, I have always liked best facilitating the growth of group members, helping them develop and fulfill their own dreams.

The “Senses Bureau”, our undergraduate research group, has been dear to my heart for over 30 years. We have searched each spring for the most creative and brightest incoming freshmen and freshwomen, inducting them into the Senses Bureau, which occupies its own “clubroom” in our lab. They are young enough that the experience of research can change their lives, young enough that they do not yet know the meaning of the word *impossible*. It is with them that we have done much of our most “far out” research, starting in the mid-’60s with creating and using specialized hardware and software for computer animation and virtual reality. They developed our haptic computer interfaces, the Touchy Feely, to reach into molecular dynamics and feel the forces on atoms and guide the dynamics, and the Touchy Twisty, to reach in and grab a whole molecule and feel the forces and torques on it, designed to allow hands-on docking of enzymes and substrates while watching the ongoing dynamics computed on a specialized array processor and displayed on an early 3D graphics machine. It is with these undergraduates that we made films on the *Chemistry of Cities*, the *Structure and Function of Proteins*, the *Structure and Function of the Human Brain*, and the *Protein Synthesis* film using 200 dancers, a jazz-rock band, and poetry to show what had just then been discovered about how proteins are made by

ribosomes in cells. It is with them that we did much of our early work on air pollution and then applied lead isotope analysis learned from air pollution to study the origin of the great Nigerian “bronzes”, gathering samples by boring little holes in million dollar ancient statues and plaques in museums in Europe and Africa. It is with them that we recently built the Virtual Explorer, which is now running in museums in Europe and America, teaching about the human immune system in the format of a Disneyland-like adventure game. I am immensely proud of what those undergraduates have gone on to do in their later lives, from being half of the team that originated the Macintosh computer, to helping found a dozen companies, and to becoming successful faculty in chemistry, physics, environmental science, computer science, engineering, Black studies, and archaeology. They have had such interesting lives, and it is a privilege to have shared part of those lives.

A highlight of my life, a couple of years ago, was to have a Wilson Group Reunion and Sixtieth Birthday Party. I highly recommend this to all faculty. Most of the people who had ever been in the group and their families returned from around the country and around the world for a joyous weekend of reconnecting with their cohorts and making new connections across the generations. We had a festival of Wilson Group films, the telling of funny stories from each of the epochs, visits to the lab, demonstrations of what we are doing now, a book of life reports and photos sent out in advance of the reunion, a book of reunion photos afterward, and a video collection of our movies.

My Regrets

I have had a wonderful life, a full life, an exciting life, a creative life, and a joyful life. I love my work. I have gotten most of what I have wanted: I have indeed found freedom in an unfree world.¹ But, can one live a creative life without paying a price, without one’s family also paying a price? Was that price too high? I do not regret my life, but if I could live it over, I would do some things differently. I would try for a more balanced, less stressful life; more healthy in the full sense of mental, psychological, and spiritual health. I would not work so hard; I would relax more often and smell the flowers. Success is the most addictive drug. I was always “doing”, even on vacations; there was not enough of just “being”.

I wish I had done something systematic about this and had learned decades earlier what I have recently learned at nearby Scripps Green Hospital from taking a stress management course,² and enrolling in the Ornish Program,³ where I have learned so much about diet, exercise, stress management, and the importance of group support. I should have earlier gone beyond what the doctors can do for me, to what I can do for myself, making life-style changes.

If I could do it over again, I would spend more time with my family when our kids were young. (Yes, dear wife, I would change more diapers.) I missed out on some important things with them. I wish I’d earlier spent more time with friends, a joy of later life. One of the best parts of being at a university is that there are so many interesting people. I wish I had been friends (and not just colleagues) with more of them.

Finally, as a chemist, I regret that I did not take sufficient care with carcinogens, for example lab solvents, despite having written a paper related to this⁴ early in my career. What we do not know *can* hurt us.

My Three Biggest Work Problems and How I Have Tried to Solve Them

How to be a creative person and still live a balanced, happy, and healthy life is a lifetime struggle. Three stressors have eaten away at my joy in my work life: time stress, money stress, and interpersonal stress.

Time Stress. I have always had a problem with feeling guilty that I was not getting enough done. My approach to dealing with this problem has been time management. Thirty years ago Lana and I took a time management course, which changed my life. It helped me realize that all I can ask of myself is that I know what my priorities are and that I work at the most important thing first. Since then I have always carried a time management notebook and have tried to maintain daily, intermediate-term, and lifetime prioritized game plans. This has been a major stress reducer for me. I have recently decided to offer everyone in my group access to a Franklin Covey time management course.

Money Stress. My midlife crisis came when I realized that I was spending 60 hours per week at work and that only about 15 of those hours were spent doing what I really wanted to do: research and teaching. After much soul-searching, I decided that, unless I could radically change this situation, I would quit being a professor. I decided that I would concentrate on having the freedom to work on what I found most interesting and would try to limit my desire for recognition or fame, because this got in the way of being happy. This decision allowed me to stop doing many things that took me away from my research and teaching.

When I analyzed how I was spending my time, it was clear that a shockingly high fraction was being spent on raising money and fulfilling the many commitments that come with receiving it. I decided that if I could find a way to make enough money fast enough, this would give me the freedom to step off that treadmill. What could I invent that would do the trick? I thought about various gadgets, about software tools, and best-seller books. Finally, I decided that if I wanted money fast, it would be most effective to invent something about money. After all, I had written a thesis in economics during that year after college in France, even though it had nothing to do with finance.

We left the U. S. 15 years ago for a sabbatical in New Zealand and, en route, during a stormy night in the Cook Islands, with the palm trees swaying across the sky and the voltage swinging so much that my computer screen was oscillating in size, I had another “aha” experience and figured out a mapping between parts of physics and of economics. I spent that sabbatical working out the theory and figuring out how to apply and test it. On returning to the U. S., I drew up plans for an office trailer for our driveway, stocked with computers and links to data sources. I took the money we had saved out of our salaries and began to try out these ideas in the stock markets of one country after another, most often in developing nations. By the time I had worked in 25 different countries on all continents, I had had enough adventures to fill a book and had exponentially expanded the small amount I began with into enough money to allow me to reduce my official university position to one-third time and to resign all my federal grants.

My university life has been so much fun since then! There are so many ways to make money: investment, invention, writing. I wonder why more faculty do not try to find a way to fund more of their research outside the painful federal grant route.

Interpersonal Stress. Running a research group, especially one in which group members work together on projects, has

convinced me that the biggest problem in getting research done is not the difficulty of the science but the difficulty we scientists have in working synergistically together. This difficulty is a universal one in organizations. The use of outside consultants who are specialists in helping groups work effectively together is common in industry and government. Strangely, we academics have avoided doing this. So, last year, after having had a particularly bad experience in which a very exciting major project was derailed by strife among the scientists involved, we set up a long weekend away from the lab with such consultants. Before that weekend, most of our group viewed this idea with skepticism, fear, or antagonism, which, in general, changed to enthusiasm and support by the time the weekend was over.

Our outside experts used techniques such as the “Ropes Course”. Each of us was strapped into a safety harness by others in the group and then climbed a high pole and walked out into space 25 feet high in the air on another swaying pole, with only a rope attached to the harness which was held by other group members to protect us from the consequences of the inevitable fall. It sure made me think and feel about the importance of working well together and trusting each other! Other exercises included pairing up and learning to lead and to follow as we moved around a room with our eyes closed, and doing various tasks under time pressure in which we quickly had to come up with and implement solutions that effectively used the skills of all the participants. In addition, we learned techniques to understand the various styles of thinking, feeling, and acting that different people have, and how to effectively communicate and work with others who differ from us.

Doing these exercises and thinking and talking about *how* we did them changed almost all of us, and gave us tools for personal growth and dealing with interpersonal problems. Group members, as a result, gave me specific feedback on how they would like me to become a better leader, which has been very valuable to me. As a result of our work and learning together, many problems that had limited our effectiveness were fixed over the next several months. Both the success of our research and the happiness of the group members markedly improved. These techniques brought problems to open discussion and provided tools for solving them. I have included the Mission Statement and Team Operating Standards that the group worked out as a result of that weekend. The process of working out that document was at least as important as the final result.

I wish I could go through such an experience with my whole department!

Closure

As I face my incurable late stage advanced prostate cancer diagnosis, I am trying to find a balance of hope and realism. Hope to draw me forward, realism so that my family, my research group, and I can make realistic decisions. Realism must be rational, knowing that medicine at present has no cure. Hope can be irrational, hope can trust that I will last until there *is* a cure. My wonderful, strong group, which is being marvelously productive with my present part-time presence (see, I did not *have* to work all the time, did I?), will continue past my expected demise under the leadership of Jeff Squier. It has already become the Wilson/Squier Group.

I have had such delight in being a physical chemist! I have so loved the joys of discovery, of connecting physical chemistry with other areas, of participating in that great central mystery of the connection of mathematics and physics to what happens in the world of matter. I take such pleasure in seeing present

Mission

The development of great science with great people, and great people with great science.

Wilson Group Team Operating Standards

Honor & Integrity

We are honest, trustworthy and truthful with each other. We speak directly with each other before speaking indirectly about each other.

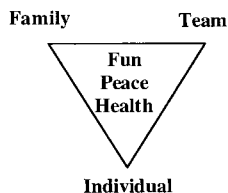
Freedom & Creativity

We are curious and seek out challenging problems, which require creative solutions.

Significance & Relevance

We gain satisfaction by doing high quality work on high impact problems that are significant to us and relevant to others.

Balance



Respect & Responsibility

We respect and are responsible for ourselves, for the team, and for the tools that we share. We communicate ideas, feelings and opinions, and we listen to others.

Teamwork & Leadership

We are a caring, sharing, and supportive team in which leadership is earned by serving the needs of others and gaining their trust and respect.

and former group members carrying on dreams I now cannot complete. They are indeed my other family; they are close to my heart.

I have had such pleasure in a rich family life, seeing my wife of 32 years becoming a fully realized artist, well-known, and fulfilled by her ceramics, her writing, her teaching, and her workshops and in seeing our kids as adults, whom I love and trust and in whom I feel confidence. As parents, we have done what we can, and it is good.

In this period of closure for my life, I walk and meditate each morning in Torrey Pines State Park, visiting the wildflowers I have watched bloom each year for over 30 years. Each day I bury my nose in their petals and give a long kiss to each of the dozen species now in bloom. I hug a special tree and look out over my beloved ocean where I have bodysurfed so often. I am saying goodbye to each of these wildflowers, as I hope, but do not expect, to see them bloom again. Similarly, with this writing, I am saying goodbye to each of you, dear colleagues. You are the flowers of the field of physical chemistry, which has been my home for the 40 years since I joined Dudley Herschbach's group. I give my special thanks to each of you who have written an article for this special issue. It means so much to me, touching my heart. And finally, my deep thanks to John Simon, who so surprised and delighted me by suggesting to me this issue and who made it happen.

References and Notes

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