For whom the bell tolls?

By Richard Herrmann

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This is my twentieth holiday season Kit Kat dinner. It has been a terrific two decades and tonight I want to dwell on one of the features of the club that has been valuable to me. It is the opportunity to know men across time as they have aged and seen the intellectual vibrancy, the continuing engagement and curiosity along with the genuine wisdom and notable grace that so many of the Kats I've known have shown year after year. They have been role models and instilled in me a rather positive belief about aging. It turns out this is not just good for the soul but also good for the body, tonight's dinner notwithstanding. After a closer look at what beliefs about aging affect, I plan to consider also how our modes of thinking and creativity change with age. If I have time, I will provide a more complete explanation of my title, but for now, let's just say that when it comes to aging the bell tolls for all of us that are lucky.

Not everyone has positive expectations about aging. To the contrary, in Western civilization generally, Philip Roth's quip that "Old age isn't a battle; old age is a massacre" captures a common perspective. Charles de Gaulle said "old

age is a shipwreck." Dr. Becca Levy, a Professor of Epidemiology at the Yale School of Public Health, in her 2022 book entitled *Breaking the Age Code: How Your Beliefs about Aging Determine How Long & Well You Live* makes a compelling case that negative beliefs about aging are so omnipresent in Western culture that they are as unremarkable to Americans as water is to fish. She points to the notion of a "senior moment." It is the catch phrase to describe memory short-circuits that psychologists have studied for more than 150 years. The thing is these happen at any age. Some forms of memory in some people do decline with age, for example, episodic memory, that is the recall of specific events in place and time. In other people, however, semantic memory, that is the recall of general knowledge improves with age. That we call memory short-circuits "senior moments," simply reveals how ubiquitous negative stereotypes are in America. Levy goes further and argues they are bad for your health.

To defend that causal claim, Levy points out that negative stereotypes about aging are not held in some other cultures and outcomes there are better. She points to Japan, for instance, where older people are usually described in positive terms and centenarians are treated like rock stars and notes that men and women in Japan enjoy the longest life expectancies in the world. It is not just that Japanese culture, for example, through fairy tales, promote positive beliefs about aging, but also

cross-generational living patterns that are common in Japan increase familiarity and reduce negative stereotypes as well. In the West, by way of contrast, we have fairy tales like Hansel and Gretel in which a mean old woman threatens to eat the children, and living spaces are as segregated by age as they are by race. A study found that in 1991, a British child had only a 15% chance of living near a person over the age of 65. By 2020, that had dropped to 5%.

Obviously, these cross-national observations do not establish even correlation much less causation. We need far more observations to do that, and we need to control for the other possible causes of long life and good health besides beliefs about aging. In India, for example, positive images of older people are common as are cross-generational living patterns, and dementia is five times less common there than in the United States, but much of this difference might be attributable to difference in diet not beliefs. The Scripps Gerontology Center at Miami University has been fielding the Ohio Longitudinal Study on Aging and Retirement for decades. As part of this, Dr. Suzanne Kunkel has included a battery of questions measuring beliefs about aging. They can be used to see if there is a correlation between beliefs and the longevity of life, while controlling for the effects of age, gender, race, socio-economic status, loneliness, and general health. It turns out, that positive beliefs correlate significantly with about seven and a half

years of extra life. Similar results have been found in Australia, China, and Germany.

Correlations can be spurious, of course. Causal contentions are more believable if we can also spell out the mechanisms by which the purported cause produces the presumed consequence. Here it seems Levy's main contention is bolstered by three related arguments. First, that negative beliefs undermine functional performance as we age. Here the notion is that if you expect you cannot do something, you will not try as hard at it and you will spend more time worrying about your presumed deficiency. These together reduce your actual capabilities to do things. Second, positive age beliefs could reduce stress as you age, and the cumulative effect of less stress could add years to your life. Finally, the positive age-beliefs could affect the physical health of your brain and contribute to its neuroplasticity, that is its adaptation and development of new neural networks as you age. Let me say a word or two more about each of these three.

In both laboratory and field experiments, Levy has found that priming participants with positive subliminal messages about aging, improves their subsequent performance on mental and physical tests. The Baltimore Longitudinal Study of Aging shows similar results. It has been tracking a national sample of

people since 1958. In it are questions that go together to make up an Attitude Toward Older Person Scale. Someone's position on that scale can then be matched with their performance on a series of tests, for example one evaluating memory. This can be done to see if current beliefs associate with current performance and if prior Attitudes about Aging held three decades ago, associate with performance now on memory and other tests. Tracking across 40 years, those people with more positive attitudes when young performed 30% better on subsequent tests later in life.

When I was preparing my last essay on John D. Rockefeller, I came across a quote by Teddy Roosevelt, Rockefeller's nemesis. TR is reported to have quipped "Old age is like everything else. To make a success of it, you've got to start young." It appears he may have been right.

I understand cortisol is the body's main stress hormone and although short-term jolts of adrenaline can be lifesaving, long-term exposure to stress is harmful. The National Institute on Aging has been collecting cortisol levels in a sample of people for more than three decades. Across those 30 years, participants with negative beliefs about aging had a 44% increase in their level of cortisol. In contrast, those with positive age-beliefs had a 10% decline. Results running in the

same direction have been found in laboratory studies in which participants are primed with positive and negative beliefs about aging and then subjected to stress inducing verbal problems and math tests.

In the Baltimore Longitudinal Study, I mentioned earlier, those with positive age beliefs were less likely to develop the telltale plaques and tangles that are biomarkers of Alzheimer's. This neurodegenerative disorder that progressively kills off brain cells has a genetic basis. It is related to the ApoE 4 gene. About 15% of the population is born with this gene and about 50% of those go on to have Alzheimer's. Ten percent are born with the ApoE 2 version of the gene. It is thought to protect against Alzheimer's. The rest are born with the ApoE3 version that has no association with Alzheimer's one way or the other. For four years, Levy tracked a national sample of 5,000 people with the ApoE4 gene. In that time, those with positive age beliefs were 47% less likely to develop dementia, after controlling age, sex, depression, and earlier cognitive scores. There evidently is a new field emerging called epigenetics in which researchers study how environmental factors influence how genes shape outcomes. There also are new studies on how the environment affects the way the brain functions.

Shinobu Kitayama at the University of Michigan, found years ago that in Japan people tended to see the background and context of a situation while Americans and Westerners tended to focus on the actors in the scene. When looking into an aquarium, for instance, Westerners saw the fish. Asians saw the seaweed and the background and the distribution of fish across the scene. He attributed these cognitive styles to living in more individualistic compared to a more collectivist societies. More recently, Kitayama has been using MRIs to see if across a life span living in these different cultures affects which parts of the brain are working when answering questions. He finds there are. Early in life the differences in the attribution of cause, to situation or actor, are smaller across the cultural divide but increase with age. Likewise, with age the parts of the brain which are doing the processing appear to grow increasingly different when comparing Japanese and Americans.

Oftentimes neuroplasticity[1] is used as an umbrella term referring to the brain's ability to modify, change, and adapt both structure and function in response

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1 P. Voss, M. E. Thomas, J. M. Cisneros-Franco & E de Villers-Sidani, "Dynamic Brains and the Changing Rules of Neuroplasticity: Implications for Learning," *Frontiers in Psychology*, October 2017.

to experience. Traditionally, this plastic nature of the brain was thought to be limited predominately to short periods during early development. More recent studies, however, find that the brain's adaptability continues across a lifetime. We see this neuroplasticity as people recover from strokes and certain brain injuries. In these cases, people who have lost the ability to speak, calculate with numbers, or move parts of their body recover these functions as the brain finds new networks and ways to communicate. Although I understand it is still controversial, some experts now find evidence that neurogenesis, that is the growth of new neurons, may be a lifelong process and play a role in these recoveries as well. That along with adaptation may also explain why some older people are able to memorize poems and text information in sometimes remarkable length and detail. MRI studies find that younger people when memorizing verbal information use the left frontal cortex. In older adults, that region of the brain is also devoted to this task but so are parts of the right frontal cortex that was previously reserved for storing and processing spatial information. It appears in older people that combining cues from text along with gestures that evoke spatial processing can be a useful tool to improve memory. Doing this activates processing in more parts of the brain.

There are, of course, real limits to neuroplasticity. Obviously, the severity and type of injury will determine the prospects for recovery and Antonio Damasio

in his labs at the University of Southern California has found that when some parts of the brain are damaged normal decision-making does not return. He argues that the ventromedial prefrontal cortex and the amygdala are critically important repositories of the recorded linkages between factual knowledge and bioregulatory states. These bioregulatory states are essentially emotions that are felt as the brain produces the chemical and physical reactions we associate with anger, fear, joy, and excitement. Damasio calls these somatic states or biases. He finds that injury to the prefrontal cortex or to the amygdala interferes with the production of these somatic states and thereby undermines normal decision-making. Patients with these sorts of injuries cannot decide between simple choices, for example, would I prefer an apple or an orange. They are also insensitive to future consequences, not recognizing ahead of time how other people will feel toward, and react to, the things they do. I get the impression Damasio does not expect the brain to adapt workarounds in these cases.

There is a second qualification I want to note. It involves creativity. Bruce Weinberg is the Eric Bryson Fix-Monda Endowed Professor of Economics at Ohio State. He studies scientific innovation, where it comes from, the paths it takes, and especially the sorts of investments that lead to it. In a piece he published in October of this year in the *Journal of Human Resources*, Weinberg notes that the

relationship between age and experience, on the one hand, and innovativeness and creativity on the other, has been a topic of research for more than 150 years with findings coming in "all over the map." He then tracks the fate of over five million articles published in the biomedical sciences across the thirty-year period from 1980 to 2009, looking at how often they are cited by other scholars as a measure of their innovativeness and creative impact. His findings are clear. The articles published earlier in an author's career do much better on this score. The drop off across a career is clear and common.

Becca Levy argues that creativity stays constant or even improves with age. Her optimistic story, on this front, appears to run counter to Weinberg's findings, although they may be somewhat more compatible than apparent at first blush. She acknowledges that the obvious advantage age confers is experience and that this is likely to contribute most to fields where accumulated knowledge is more central than technical skill. She recognizes that careers in theoretical physics and mathematics often peak early. This may be true too in the biomedical fields Weinberg is tracking. Dean Simonton, Distinguished Professor of Psychology at the University of California, Davis, also studies human intelligence and creativity. He finds that "the ratio of bull's eyes to the total number of shots stays the same with age." This suggests that declining productivity on the creativity score could

be the result of taking fewer shots, reflecting a change in motivation, something we have not discussed yet and which seems to be a common part of aging as desires and thoughts about how you want to spend your time evolve.

I have read that art historians speak of an "Alterstil." That is a style an artist adopts late in life that reflects a drastic change in technique, affective tone, and subject matter. It usually includes a heightened sense of drama, and expansion of perspective and a reliance on intuition. The later in life landscape and seascape paintings of the 19th Century English artist Joseph Turner, for example, are said to reflect more dramatic depictions of light, with grander perspectives and less attention to detail. Becca Levy directs attention to two famous Pietàs sculpted by Michelangelo. The first he did at 23. It now sits at the entrance to St. Peter's Basilica in Rome. The second, he sculpted at 72. It is now in the Opera del Duomo Museum in Florence. In the first, Mary gazes down at Jesus without any sorrow marring her face. In the second, she looks deeply distraught and unable to hold Jesus up by herself. Two other figures are helping her, all three intertwined in the emotional pain of love and grief. Michelangelo not only puts himself into this Pietà as an old man helping Mary support Jesus, but also packs a lifetime of experience into its emotional expressiveness.

There are also contentions that the work of literary artists changes as they age. James Pennebaker, a professor at the University of Texas has studied creative output of well-known English Language poets, playwrights and novelists focusing on an equal number of men and women. He finds that in the later careers of both men and women the amount of time they spend in print explicitly writing about their thinking increases. He measures this metacognition, or explicit introspective thinking about your own thoughts and beliefs, in several ways, one of which is by tracking the cognitive complexity evident in their writings. Cognitive complexity does not refer to the difficulty of the content that is being processed, nor does it refer to how accurate the beliefs are. Rather cognitive complexity captures how much a person recognizes that there is more than that one relevant dimension or consideration to a topic, and how much they recognize those different considerations are related to each other. At one end of the scale, the author relies, without qualification, on a simple, one-dimensional rule for interpreting events or making choices. Toward the middle of the scale, the author recognizes alternative perspectives or different considerations, and accepts these as being relevant and valid. At the complex end of the scale, the author recognizes the several alternative considerations not only as valid, but also as interacting with one another or as poised in a tradeoff relationship and then integrates the evaluation of them into an overarching viewpoint.

There are numerous reasons thinking often inclines toward the simpler end of the scale. As Daniel Kahneman and others have found, we often are thinking fast and relying on cognitive shortcuts. There also are the automatically triggered emotional biases that Antonio Damasio says happen non-consciously. Philip Tetlock, a professor in the Wharton School at the University of Pennsylvania, argues in the 2017 *American Economic Review* that there are political reasons as well. People, he suggests, find facing tradeoffs painful and politicians are more than ready to help them avoid that pain either through the promotion of magical thinking that erases the tradeoff or by promoting the idea that it is a taboo tradeoff, in which case, there is no decision to make.

Many decisions involve tradeoffs that pit competing material desires against one another. Sometimes, these evoke emotions and sometimes they raise uncomfortable thoughts, for example about death, maybe even the value of a life, when buying insurance. Tetlock draws attention to those decisions that go still further in pitting secular values attached to material considerations against what is thought to be scared. These he labels taboo tradeoffs. For example, you can insure people, but not sell them. You can sell land, but not if it is considered scared. And you can trade with other countries but not if they are seen as enemies, then cooperation is seen as treason violating scared duties of loyalty.

What Tetlock finds in his 2017 study, is that the political discourse today in America too often frames the tradeoffs we face as taboo ones. Polemicists transform the mundane into the monumental so they can outflank their opponents, describing as a sacrilegious violation even thinking there is a choice. This, of course, makes decision-making less painful by denying any other morally acceptable choice is available. It does not, however, foster cognitive complexity. To the contrary, Tetlock concludes that it leads to "Mutual Assured Moral Destruction." The only antidote he sees is to reframe the choice as a tragic tradeoff pitting two scared values against one another, for example, loyalty to the country versus commitment to freedom of speech, or the saving of this one person – maybe Brittney Griner – versus saving others in the future by not capitulating to blackmail.

Tetlock does not argue that with age, facing tradeoffs with cognitive complexity is easier or more frequent. It could be that with experience seeing the tragedy in what must be decided increases. That would fit with our notion of youthful exuberance and hubris becoming tempered by age and experience. I have not come across any studies, however, that explore this in greater detail, so I remain agnostic. I will note, however, that Becca Levy's main line of argument is

that we need to abandon stereotypes. She concludes that "thinking of everyone over 60 as the same makes about as much sense as lumping everyone between the ages of twenty and fifty in the same category." Her contention about the relationship between age and wisdom is "Lots of old people don't get wise, but you don't get wise unless you age."

It is ironic, I suppose, that my title evokes Ernst Hemingway who took his own life at 61. The truth is that when the e-mail came in giving me this assignment, I had spent the previous month in Spain, and I was working hard on a talk and project taking me to Serbia in early July and onto Germany for the rest of the month. Throughout my trips to Europe, the war in Ukraine was on my mind. It was hard not to think about *For Whom the Bell Tolls*, Hemingway's famous comment on the Spanish Civil War. In hindsight, maybe I should have revised my title, although this one did not reveal my intent, and upon reflection, might even fit. Hemingway's famous book about the Spanish Civil War certainly deals with the power of beliefs and how they shape lives. His leading character, Jordan, begins the book as a true believer in the Cause. Then through experience grows increasingly disillusioned as he experiences the reality of war with all its brutalities, vanities, and hypocrisies. The simple stereotypes and the stark good versus evil caricatures that guide Jordan's actions with moral certitude in the

beginning of the story, evolve into messy pictures, tragic tradeoffs, and deeply conflicted moral uncertainty. Hemingway never uses the term cognitive complexity, but he shows how it develops through experience. He also makes clear that his moral anchors rest in concern for the real-life fate of the people on the ground, not in the abstract causes espoused by elites.

Hemingway on the page before page 1 presents this poem by John Donne.

> *No man is an Iland, intire of itselfe; every man*
> *is a peece of the Continent, a part of the maine;*
> *if a Clod bee washed away by the Sea, Europe*
> *is the lesse, as well as if a Promontorie were, as*
> *well as if a Manor of thy friends or of thine*
> *owne were; any mans death diminishes me,*
> *because I am involved in Mankinde;*
> *And therefore never send to know for whom*
> *the bell tolls; It tolls for thee.*

The in-groups and out-groups, the us and them, take a backseat to mankind. It is the one older character in the book, Anselmo, who sees this most clearly and serves as the sounding board Jordan turns to as he wrestles with his growing recognition of the tragedy consuming them.

Eighty-two years after *From Whom the Bell Tolls* was published, Henry Kissinger at 99 published this year a book on leadership. As he draws this 500-

page tome to a close, he reflects on the continuing challenge faced by far-sighted good leaders. Those are the ones, according to Kissinger, that assume responsibility not only for the best possible outcome, but also the worst ones, as they try to steer their countries wisely in the midst of mass politics and the persistent conflicts borne in the transition from empires to nation states. He worries the challenge today may be insurmountable, as the now dominant instantaneous image-based media that is aiming to provoke visceral reactions, not thoughtful ones, presents the world in simplistic morality plays that are designed to be absorbed in short-takes and cutoff extended consideration.

I have saved rather little of what I wrote before the digital revolution but as I cleaned out my office a few years ago I kept two old-fashioned type-writer produced papers, one I wrote as an undergraduate on heroes and one I wrote as a graduate student on the history of the first-half of the Twentieth Century. The later one was written for a course taught by Robert Colodny, who had fought in Spain with the Abraham Lincoln Brigade. I reread it recently, having my own cross generational conversation with my 23-year-old self. One of the patterns I saw then and see again today is the contrast between the breathtaking progress being made in science, where uncertainty and system complexity is standard fare, and the frustratingly slow progress made in managing social and political relationships

where dogmatic certainty and stereotypical simplicity remains the standard fare. I must say, it was refreshing to spend time while preparing this essay rummaging around some on the scientific side where new discoveries about aging are changing lives in positive ways even if socially popular beliefs are hard to dislodge. Real progress has been made in understanding what aging entails. The Mayo Clinic has a website outlining what to expect such as a stiffening of the blood vessels in the cardiovascular system making the heart work harder, the shrinking of size and density along with the loss of strength and endurance in muscles, and the deterioration of the eyes' adaptation to different levels of light. For each of these, the Mayo Clinic also has evidence-based things you can do about these expected changes, albeit without any promise of reversing them. Modern-day Juan Ponce de Leóns will need to keep searching.

One area the Mayo Clinic says less about is how aging affects the brain. It anticipates minor effects on memory and perhaps declining abilities to multitask but, evidently, much here is still unknown. In fact, a recent National Science Foundation report concludes that for the most part, the brain remains an unknown frontier. Neuroscientists do not yet understand fully how information is processed or the chain of events in the brain that generates a thought, behavior, or physiological response. Progress has been made with game-changing tools for

visualizing and analyzing parts of the brain in unprecedented detail. Just two years ago in 2020, a group at the University of Washington made a new map of the brain showing 97 previously unknown areas. Scientists have also identified brain regions that regulate speech and particular motor functions and are using this to revolutionize prosthetic devices that can be controlled by the brain. They are also tracking the structural and functional changes that occur in the brain throughout an animal's life span. Nevertheless, with 80 to 100 billion neurons, the brain remains the most complex biological structure in the universe. Much remains a mystery. Learning this made me feel maybe just a little better about how much we still do not understand on the social and political science side of things, and hopeful that tomorrow will bring new discoveries as new generations age.