

Eberhard E. Fetz

My Liberating Year at the Wissenschaftskolleg

Eberhard Fetz was born in 1940 in Zwenkau, Germany and moved to the United States in 1947. He received a B.S. in Physics from Rensselaer Polytechnic Institute (1961) and a Ph.D. in Physics from the Massachusetts Institute of Technology (1967). Since 1968 he has been at the University of Washington, most recently as Professor of Physiology and Biophysics and Associate Director for Neuroscience at the Washington National Primate Research Center. His research has investigated the neural control of limb movement in primates. This includes studies of monkeys' ability to volitionally control the activity of brain cells, the functional organization of motor cortex cells controlling forearm muscles, the activity of spinal interneurons during hand movement, neural network modeling, and the development of an implanted recurrent brain-computer interface. This work is described in over 120 research papers and book chapters. – Address: Department of Physiology and Biophysics and Washington National Primate Research Center, University of Washington, Seattle, WA 98199, USA.

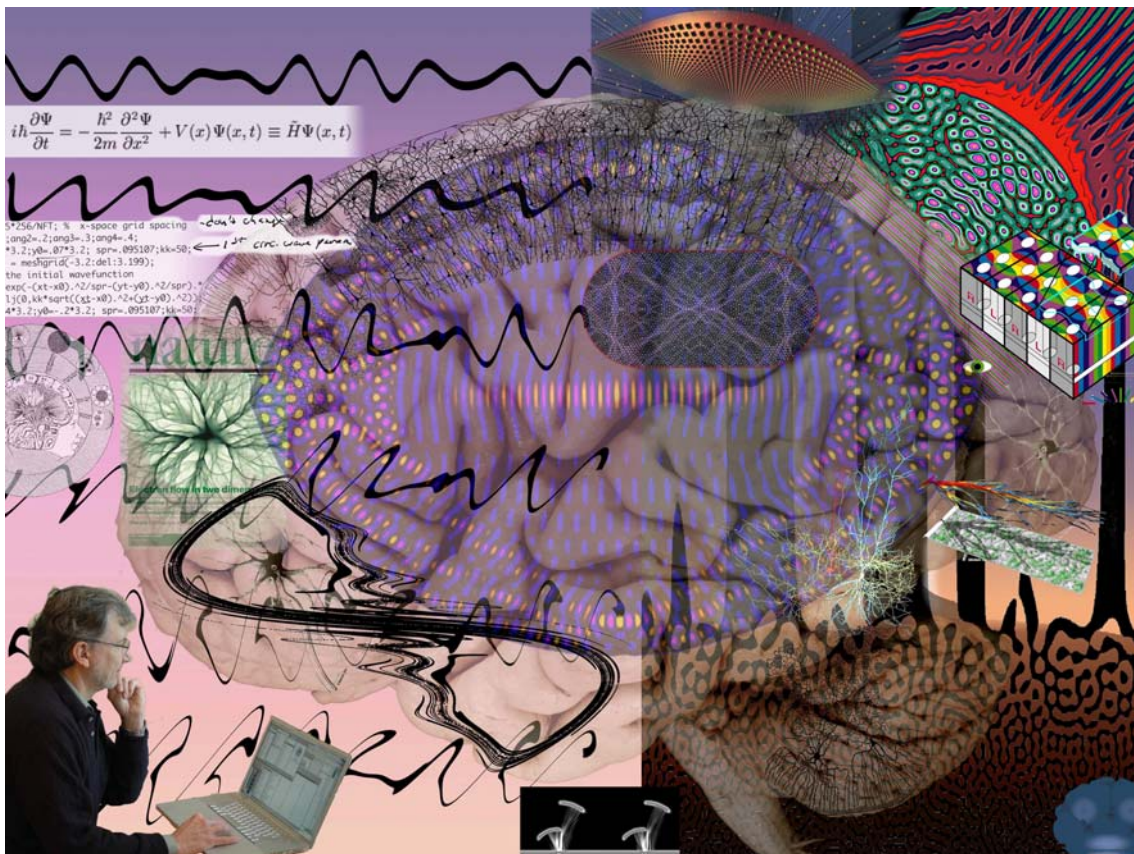
My sabbatical at the Wissenschaftskolleg began with the exhilarating realization that I was completely free to pursue whatever interested me for the next 10 months. Back in real life, constrained by incessant duties, I sometimes gave myself a birthday gift of taking the day off to do whatever I wanted – now I found myself doing this every day! I clearly recall sitting in my luxurious Villa Walther suite, enjoying some favorite delicacies from KaDeWe, listening to Beethoven, relishing my total freedom to pursue new creative directions, and realizing “I’ve died and gone to heaven!” Furthermore, the upcoming year offered a rich feast of stimulating intellectual fare, thanks to the cornucopia of cultural events in Berlin and the intimate camaraderie of a community of scholars at Wiko.

Particularly exciting for me was the opportunity for new creative explorations at the intersection between my primary interests: neuroscience and art. My Wiko project involved learning to use graphic techniques to represent the cognitive functions of the brain. My career as a neurophysiologist has been driven by an enduring passion to understand the mechanisms underlying the remarkable functions of the brain. The neural networks in the brain effortlessly perform common miracles of conscious perception, controlling volitional movements, and generating complex thoughts. This is all done with neurons. Neuroscientists have learned much about neural mechanisms in the brain, described in arcane papers accessible only to the initiated.

My second great interest in art had always been relegated to a hobby, and relatively neglected for lack of time. Now I was keen to explore artistic representations of brain mechanisms. From the representational perspective, I thought that collages of graphic images could communicate the functions of the brain to a broad audience by

exploiting the power of associations between juxtaposed images. From the aesthetic perspective, the mysterious relationship between mind, brain, and world seemed to have largely unexplored evocative power. Thanks to the Wissenschaftskolleg, I finally had the chance to actively combine these two interests in the brain and art.

During my stay at Wiko, I proposed to produce collages that express the operations of the brain in various fields of intellectual endeavor, using Wiko Fellows as subjects. The idea was to incorporate images representing their cognitive activities collaged with images of the cortical areas and neural networks involved in performing those functions. A particularly good example of this agenda was Eric Heller, whose brain converts quantum events described by the Schrödinger equation into Matlab code that generates spectacular graphic patterns produced by quantum wave propagation and resonance. These images, which Rick generously shared, lend themselves perfectly to representations of brain waves and reverberating neural activity. The accompanying figure shows the current version of a collage evoking the cognitive processing in Rick's brain.



“Resonant Transformations”

Another collage, shown elsewhere in this volume, presents the intellectual activities of the Wissenschaftskolleg as analogous to the creative operations of the brain

– in both cases, communications between the components generate new associations and insights. The background is a mosaic of the supporting Wiko staff, who nurture these activities.



“WIKO Brain”

These examples illustrate the fact that collages depend on a healthy supply of images. My initial assumption that any and all printed images are fair game for artistic appropriation was quickly dashed by the discovery that such pictures are protected by copyright restrictions. This impasse led to the revelation that the world is full of interesting images to be freely captured by the camera, which led to new adventures in digital photography. Viewing the world with an eye for interesting compositions, I gained a new appreciation of the layered meanings in everyday scenes and the aesthetic resonance between art and life. Another invaluable source of images was the extensive collection acquired by Horst Bredekamp in his IMAGO database project at the Humboldt University. Horst generously invited me to vacuum these images up into my hard drive, and in appreciation I created a photomosaic portrait of Horst composed of images from his collection.

At the beginning of my year, ideas about possible collages and interesting multimedia pieces came in exciting torrents. Given unlimited time, everything in Wikoworld and Berlin became potential material for a collage or video, producing an intoxicating state of creative possibilities. Of course it turned out to be easier and more exciting to conceive of these projects than to carry them all out. The seemingly unlimited time to pursue diverse projects and master the requisite techniques went by all too quickly. Around May came the rude awakening that time was running out too fast to complete all those wonderful works. Still, I had launched many interesting projects and learned some lessons about the time it takes to bring ideas to the point of presentation.

One of the works begun at Wiko but still in progress is the “glass brain” project. The centerpiece is a large slab of thick glass in the shape of a cross section of the brain. Thanks to the skills of a glass artist in Seattle, this contains bubbly inclusions resembling neurons. Behind this translucent slab, a computer monitor generates images representing propagated neural activity and/or cognitive activities. The patterns of propagated waves of activity are rendered by computer animation techniques. Working with Rick Heller, who had developed algorithms for visualizing the propagation of quantum waves, we modified his MatLab program to represent waves of neural activity propagating in the brain, incorporating appropriate brain-shaped boundary conditions. The glass slab and monitor needed to be mounted in an appropriate enclosure, and a talented relative living in Berlin constructed a beautiful custom frame, allowing additional modes of illuminating the glass brain. The whole enclosure will be covered with collages of neural images and the piece is actually getting closer to completion.

A particularly valuable part of my Wiko experience was participation in the stimulating discussions of our Bildwissenschaft group. Coming from diverse disciplines, the members opened my eyes to new and varied perspectives on the history and philosophy of images in art. I discovered an immediate rapport with Karl Clausberg, who appreciated the central role of brain mechanisms in understanding the visual arts and has written extensively on this theme. Another collage in the works represents Karl’s brain, exemplifying his ideas on hemispheric specialization and pictorial composition. We still plan to incorporate some fMRI images of Karl’s brain testing its own theories. I also enjoyed the prolific perspectives of Tom Mitchell, whose awesome talent for imaginative association and expression is a natural wonder. Thanks to the invaluable help of the Wiko staff, the “Picture Boys” assembled an excellent mini-symposium of colleagues to explore issues of image science. This led to many new and invaluable contacts.

During my year I became involved in making videos, initially motivated by the need for animations to represent the dynamics of neural activity mediating thought and perception. Along the way I began an unanticipated project to create a video collage of the events at Wiko, perhaps subliminally influenced by Berlin’s movie culture. This

involved combining video clips of events at Wiko and in Berlin, still images and audio using the editing program Premiere Pro. Needless to say, the time to learn these new techniques and to mix the material was only available through the unique freedom provided by Wiko. The result was “WiKo Mix 04–05”, a video collage whose world premiere was the farewell party. The enthusiastic response has encouraged me to add more material and Unfug. Repeatedly reviewing the video footage of events at Wiko during the editing, I was struck by the massive amount of information and experiences that we were exposed to during the year, compared to the miniscule amount that one can actually remember.

An account of my liberating year at Wiko must include a memorable experience in spontaneous mind opening. One evening walking home from a stimulating discussion, I stopped to sit on a bench by Koenigsee, and experienced a remarkable epiphany. Suddenly my thinking mind was totally displaced by the vivid scene before me, and consciousness opened to the incredible complexity of what was happening here – the rustling leaves in the huge branches swaying with the wind, a choir of birds loudly chirping their antiphonal chorus, the fading twilight rippling on the water. With all conceptual thinking silenced, I was completely transported to the paradise of present reality seen clearly. Since then, the memory of this ecstatic experience has served me well. The birds still call me through the window of my mental prison, to remind me of the liberated state – and sometimes their wake-up calls even dissolve the walls again.

My partner, Wendy Nakao, visited several times during the year and also fell in love with Berlin. Her work as Roshi and Abbot of the Zen Center of Los Angeles kept her too busy to come for the entire year. On her first visit in January, we considered escaping the anticipated cold by flying south, but luckily we stayed in Berlin, which was much more enriching and turned out to be unseasonably warm. One memorable weekend in Hamburg, we enjoyed the Clausbergs’ special hospitality and marveled at Karl’s quirky collection of his surreal creations. Wendy’s second trip in June provided an opportunity to explore many additional venues and visit her Zen colleagues in Berlin and Poland.

My stay at Wiko provided welcome opportunities to see many German relatives again and even host a mini family reunion. My son Ethan came over for a month to discover the wonders of Berlin. We also drove to my birthplace in Zwenkau, south of Leipzig, where a friendly Rathaus official quickly produced my birth certificate and provided a notarized copy.

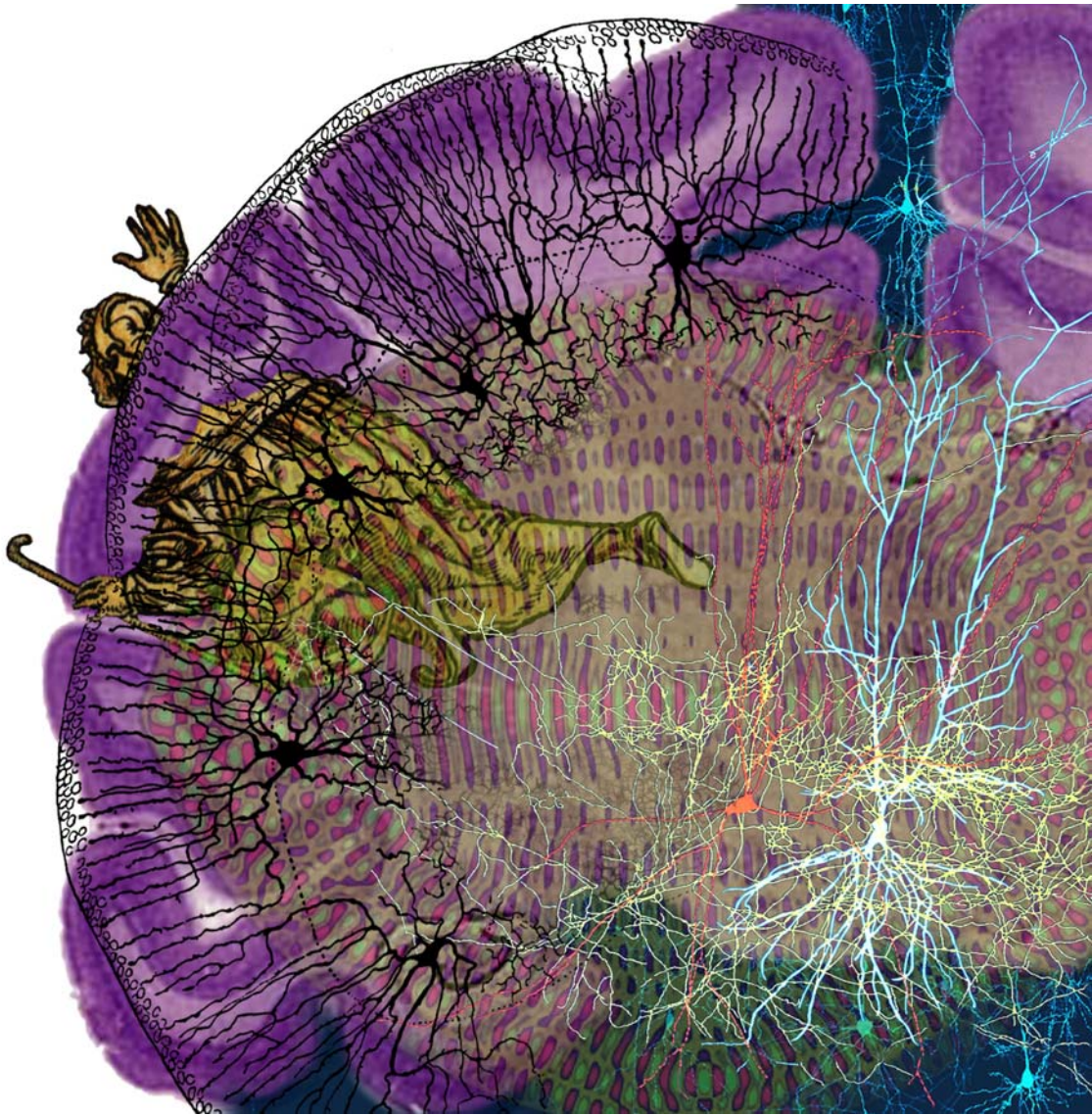
My year in Berlin also provided a welcome distance from the distressing political situation in the United States. For me the re-“election” of George W. Bush was a profound disappointment – it meant continuing the nightmare of living with this ignorant and arrogant man as president. Also distressing was the degree to which an

aggressive minority had seized power and manipulated the country to its ends, brainwashing a deplorably gullible population through slick and deceptive propaganda, and systematically dismantling democratic government. Witnessing the descent of my country into its own form of fascism from the vantage of Berlin offered some unique insights. Seeing the movie “Der Untergang”, about Hitler’s last days in Berlin, I was struck by the uncanny parallels between the devious strategies of the neocons and the Nazis, in fomenting war and exploiting fear and nationalism to incrementally rescind civil liberties. Devoted supporters in the movie also illustrated the seductive power of a headstrong leader, who is followed blindly despite his dangerous delusions. At the same time, Berlin also ameliorated my despair at the political decline back home: seeing the many displays around Berlin and Wannsee that candidly documented the Nazi regime, I realized how far Germany has risen from its nightmare. Hopefully America will also recover from the disastrous policies of the mendacious Bush administration and will restore rational values and democratic principles.

For me, the daily interactions with so many intelligent fellows and visitors was a profoundly enriching experience. Each meal at Wiko was a stimulating opportunity to communicate intimately with accomplished colleagues and to pick their brains about their views and expertise. Conversely, I also enjoyed the remarkable experience of having many new insights that these discussions called forth from me – I found myself expounding on issues that had never had the proper context to be articulated.

So my Wiko experience turned out to be liberating in many ways. It allowed me to break out of the straightjacket of professional routines and explore new creative initiatives. It expanded my perspectives through innumerable experiences in the arts and humanities. It allowed me to learn techniques of collage and video that I would never have had the time to acquire. This unique year has empowered me to pursue new creative directions in the future.

I am profoundly grateful to have had this transforming Wiko experience. Thanks must go first of all to the masterminds who created and, through the years, sustained this intellectual utopia. More immediately, I thank the outstanding staff dedicated to ensuring a successful and productive experience. I particularly appreciated the infectious enthusiasm of Reinhart Meyer-Kalkus, who consistently supported my projects. The library staff was an invaluable link to a rich reservoir of information and fulfilled any wish in remarkably short order. The expert computer group was always available for required fixes and helpful technical advice. The essential contribution of dedicated staff behind the scenes, in the kitchen, administration, etc. all supported and assured an invaluable experience at Wiko. In short, my initial epiphany was confirmed: I clearly had gone to heaven, and find myself enriched and transformed for it.



“Awakening” To be rendered on clear glass [or mirror], with white portion transparent [or reflecting].