### **Career Retrospective**

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#### Foreword

Hampden-Sydney has hosted a great many professors throughout its nearly 250 years. Hundreds of students have learned under these incredible professors, but few know their stories from undergraduate to Ph.D. To rectify this, four recently retired STEM professors shared their experiences and are recorded in the following pages. Whether it be prodding the mind to learn its secrets, mathematical dilemmas, or the psychology of hunger, these professors have seen it all in their storied careers.

### G. Daniel Weese, Ph.D.; Psychology and Neuroscience

Dr. Daniel Weese retired from Hampden-Syndey College after a storied 34year career as one of the college's psychology professors, specializing in behavioral neuroscience. Dr. Weese may have retired, but his long history with the college has greatly impacted hundreds of psychology and neurobiology students. Before all of that;



however, Weese too was once just a student. Dr. Weese started his journey to Hampden-Sydney in 1968 at the college of Washington University in St. Louis. From his freshman year to his sophomore year at Washington University, the young Daniel Weese was undecided on what his major would end up being. That was, until he signed up for an introductory psychology course in which he needed to write a practice research proposal. In searching for a subject to write about, he stumbled upon an article elaborating on split brain research, or the phenomenon in which both sides of the brain process information differently when surgically separated. This discovery stoked the fires of curiosity and Weese spent his spring break of 1970 cooped up in the college library, researching and writing his mock proposal to examine the laterality of the sense of taste. In a twist of fate, the advising professor, Dr. Stanley Finger, was so impressed by the proposal that he invited the undergraduate Weese to work in his physiological psychology lab.

His junior and senior years were dedicated to working in Dr. Finger's lab, where he researched the cortical touch system and how related memories are stored using the rat model system. As an undergraduate, Weese attended and presented at the third annual Society for Neuroscience, a prestigious event in which the field's leading scientists present their research. After graduating *summa cum laude* from Washington University with a dual degree in biology and psychology and a myriad of experience in the burgeoning field of neuroscience, he applied to Indiana University Bloomington, where he pursued his interests in neuroscience and began working towards his Ph.D.

Weese's time at Bloomington introduced him to a new side of neuroscience, and he began working to stimulate the brain via electrode inserts rather than lesions used to disable parts of the brain. This vein of research was focused on the lateral hypothalamus and how artificial stimulation may affect the way in which it is involved in motivation processes.

For his dissertation, he returned to the lesion studies he did during his time as an undergraduate. This time, he focused on the various subcortical pathways that induce motivational states. Sensory neglect occurs when the hypothalamus is damaged with artificial lesions and is characterized by difficulty orienting to stimuli opposite or contralateral to the lesion site. These kinds of lesions can also be found in humans as well who have experienced brain damage to cortical regions. Weese discovered that the difficulty in orienting to the stimulus was caused by severing a motor pathway that runs through the lateral hypothalamus and not the damage caused to the lateral hypothalamus itself. The project was highly demanding, as fifty rats would need to undergo the exacting lesion surgery and then testing. Weese earned his Ph.D. in 1977 after five long and hard years in the crucible of graduate research.

After achieving his Ph.D., he attained a faculty position at the College of Emory and Henry, a liberal arts college in Virginia that foreshadowed his future time at Hampden-Sydney in some respects. His time at Emory and Henry, however, was on the shorter side; and while he taught a great deal of classes, he had little time to pursue any research avenues at the college. After a time, he departed Emory and Henry and headed east to New Jersey to take up a position in a pharmacology laboratory at the University of Medicine and Dentistry of New Jersey.

After a year, he left New Jersey to take up another professor role at Wesleyan College, an all-female college in Georgia. While working as the assistant basketball coach, Dr. Weese drove by a sign on the highway marking the exit for Hampden-Sydney. A short time later Dr. Weese left Wesleyan College and made his way to Hampden-Sydney, which was a small college, had lab space to continue his studies, and most importantly, was hiring.

Since joining in 1989, Dr. Weese has been integral to developing the Hampden-Sydney Psychology program and teaching neuroscience classes. In 1998, he found a new avenue of research which he would pursue for the remainder of his academic career. Through his connections with the Society for Neuroscience, he traveled to the University of St. Andrews in Scotland on his sabbatical to perform a joint research project with a colleague at the university. Dr. Weese would recommend focusing on the region of the brain known as the TRN or Thalamic reticular Nucleus a short while after his arrival. He learned of the TRN when glancing at a rack of current editions of

Journals in the coffee room of the School of Psychology he noticed an article detailing the TRN. The article which caught his eye would propose that the TRN may be involved in regulating the flow of sensory information to the cortex for further processing. With newfound inspiration, the pair began preparations to study the TRN and prove that



(Above) Dr. Weese at his final Society for Neuroscience Conference in DC

there was a direct correlation between the function of the TRN and attention. Over the course of the sabbatical, coordinates for the TRN and its location in the brain needed to be refined and as such the duo needed to refine the coordinates, develop the proper methods for experimenting, and set up the required equipment. Their toiling; however, yielded the first experimental data that the TRN was critical in attention processes. This was determined by comparing the TRN damaged rats versus those who had no lesion damage in a simple response cue test. Normally, responses occur faster when both cues occur on the same side since the rat does not need to shift attention. This same side advantage; however, was absent in the TRN damaged rats marking the first data backed evidence of the TRN and its vital role in attention.

This line of research was presented at the Society for Neuroscience 1999 and even published in the esteemed Society for Neuroscience Journal. Dr. Weese continued to research the TRN and its relationship with attention upon his return to Hampden-Sydney where he would continue to research it up to his retirement.

In 2005, Dr. Weese once again took a sabbatical to research with Duke University Medical School. Originally, he proposed a variation of a TRN study, but instead, he would find himself in a drug addiction study. The study proposed that drug addiction utilizes very similar mechanisms to that of memory formation. Furthermore, these neuronal memories could be altered with exposure to new experiences, thus the hypothesis of the study was that those changes following chronic exposure to psychoactive drugs were also modifiable. Pergolide and Ondansetron were given in sequence to rats that had been trained to selfadminister cocaine or methamphetamine. The goal was to activate the memory of the stimulant drug and then alter the memory in such a fashion as to make it unpleasant since Pergolide and Ondansetron induce nausea. The rats subjected to the methamphetamine demonstrated a significant reduction in the relapse of drug taking and the findings were published in a pharmacology journal shortly

after. The research opened new doors at Duke for treating addiction and underwent further study after Dr. Weese returned to Hampden-Sydney.

Over his 34 years at Hampden-Sydney, Dr. Weese trained hundreds of students in both psychological methods and the finer points of neuroscience. Among the courses he taught regularly were Behavioral Neuroscience with a lab, Cognitive Neuroscience, Sensation and Perception, and the ever-popular Drug and behavior course. He continued his research into the Thalamic Reticular Nucleus in his rat lab which students could join to learn valuable skills in experimental research, rat surgery and brain function. He regularly attended the Society for Neuroscience and let other interested students tag along to expose them to the realm of neuroscience. As of 2023, the final set of students passed through the rat lab in a final TRN experiment which would close out Dr. Weese's academic career.

While Dr. Weese may no longer be in the academic ring at Hampden-Sydney, he has not completely left. His wife, Dr. Katherine Weese, still works in the Hampden-Sydney English department and Dr. Weese now puts his many years in neuroscience to work on the tennis court as Hampden-Sydney's assistant tennis coach. In addition to working as the assistant tennis coach during his retirement, he has other plans as well. Namely, he plans to travel more, such as to England for the Wimbledon Tennis tournament and to Germany. Dr. Weese will continue to have a presence on campus and lead the Hampden-Sydney Tennis team to hopefully many more victories.

# Robb Koether, Ph.D.; Mathematics and Computer Science

Dr. Robb Koether was a pioneer at Hampden-Sydney for his contributions to both



the mathematics department and the computer science department. Over his 39 years with Hampden-Sydney, Dr. Koether would distinguish himself as a talented mathematics professor and worked alongside other professors such as Dr. Ray Gaskins to pave the way for the Computer Science department at Hampden-Sydney. His dedication helped to keep the computer science department alive and well. He also inspired a lifelong passion of mathematics in many of his students during his time at Hampden-Sydney.

Dr. Koether, before making his way to the Hill, received an undergraduate education at the University of Richmond starting in 1969. Koether, even before attending the University of Richmond, was deeply interested in mathematics. He continued to pursue his passion at the University of Richmond, where he performed at an exceptional level for an undergraduate student. After graduating from the University of Richmond, he went on to attend the University of Oklahoma in 1973 as a graduate student in the hopes of obtaining his Ph.D. in mathematics. Five years later, he would be bestowed the prestigious rank of Ph.D. in mathematics. Now having the credentials to become a professor, he began looking for employment.

Dr. Koether first accepted a position at Campbell University In North Carolina. During his job search, he stumbled across Hampden-Sydney in 1980, yet he was reluctant as many smaller colleges were faltering at the time. Dr. Koether taught at Campbell University for a year before parting ways and once again looked to Hampden-Sydney for potential employment. This time, Dr. Koether chose to apply for the position at Hampden-Sydney and was accepted in, which would mark the start of his long career.

While Dr. Koether was a Ph.D. in mathematics, the growing field of computer science would see an uptick in popularity, but relatively few professors at the time had the skills or training required to successfully teach a new generation of computer science students. Seeing this problem take hold in other colleges and at Hampden-Sydney, Dr. Koether began branching out into the nascent computer science field. Dr. Koether along with Dr. Valente, another professor trained in computer science, would go on to form the core pillar of the Hampden-Sydney computer science department.

Dr. Koether took to the principles of computer science quite easily during his training. He reasoned that math was a highly abstract field which required extensive investigation into the finer principles of mathematics to become proficient with the concepts. Since he had mastered mathematics previously, the learning of computer science (which was a more practical and application-oriented field) was far easier to grasp, especially with his knowledge of math. With his newly acquired skills in hand, Dr. Koether continued to educate students in both mathematics and computer science.

Before coming to Hampden-Sydney Dr. Koether had relatively little experience with

research in mathematics, but he began to explore his interests and start to find what lines of research he wanted to focus on. In the following years, his interests and subsequent research would lead him to primarily focus on complex puzzles and games that could be solved using mathematical problems.

One such puzzle he studied was titled "Outwitting the Lying Oracle". The puzzle specified that a person is flipping multiple coins into a pond. An oracle knows the outcome every time and will tell the person betting. The dynamic part of the puzzle is that during the entire set of coin flips the oracle can lie exactly once. With this problem in mind, Dr. Koether and another mathematics professor, Dr. John Osoinach teamed up to identify the best way to place bets to minimize the chances of losing money during the oracles permitted one lie. The paper, published in a mathematics magazine, would go on to win an award from the Mathematical Association of America. for excellence in mathematical exposition.

Another problem that Dr. Koether tackled was called the "Locker Door Problem". The "Locker Door Problem" was much the same as the "Lying Oracle" in terms of the mathematics needed to solve the problem. The problem in this case is that a set of students is labeled 1-100. These students are sent down the hall to open a set of lockers also labeled 1-100. The problematic part of this was that every student reverses the state of every door associated with their number (ie. Student 4 reverses the state for doors 8,12,16 and so on). Dr. Koether and Dr. Rebecca Jayne set out to find which doors were left open and which were left closed by the time all 100 students went through. Dr. Koether would identify which lockers were left open and left closed in addition to finding ways to reverse engineer the problem to get it to repeat itself.

Some of his other research, in addition to some he did with students, was finding proofs

to mathematical theorems. While the process of finding proofs to such theorems sounds simple, the actual process is quite difficult. The basis for a mathematical theorem is to provide a wholly true statement as to why a certain proof is true. This is difficult in that If a single scenario proves the proof wrong then the entire proof is discredited and discarded to start work on another potential proofs.

Dr. Koether continued to teach and research at Hampden-Sydney until the onset of 2020, when he retired from Hampden-Sydney after 39 years of teaching both mathematics and computer science. Over his 39 years at Hampden-Sydney, he noted how the quality of the students seemed to improve as the years passed by. At the start of his career at Hampden-Sydney students were not always as well behaved or polite as they should have been, but Dr. Koether saw a dramatic shift in the overall student body over his years to a far more civil and polite group of young men truly representing the ideals of Hampden-Sydney.

Dr. Koether still lives close to campus in his retirement and still sees his former colleagues from time to time. Dr. Wilson, a current philosophy professor, still meets with Dr. Koether on a regular basis due to their shared love of polar explorations, of which they exchange books and thoughts with each other. The two professors also work together to help cut firewood and take down dead trees together when their time permits. Dr. Koether is an avid outdoorsman and has hiked many times with Dr. Wilson and by himself. When Dr. Koether was 13 he was already hiking the Appalachian trail and finished roughly 100 miles of the hiking path by the time he entered the University of Richmond. Since then, he has hiked all of the sections of the Appalachian trail starting in his undergraduate years and finishing the last section in 2010. Dr. Koether still continues to find joy in the great outdoors and reading with his colleagues while in retirement.

## William Shear, Ph.D.; Biology

The path to a Ph.D. is never a cut and dried affair. Everyone has a different experience with how they obtained their Ph.D. and none have a more fascinating origin story than Dr. William Shear. Dr. Shear taught at Hampden-Sydney starting in 1974 and remained at the college for 41 years, training countless new biologists that would leave the college and go on to pursue their interests in academics or in the workforce.

Dr. Shear's story begins in 1959 as an undergraduate at the College of Wooster, Ohio.



Here he discovered his passion for biology, but remained a relatively average student through his time at the College. The young William Shear graduated in 1963 and proceeded to take the Graduate Record Exam which can be equated to a MCAT for graduate students. Shear was accepted to the University of New Mexico Biology Department. Shear moved to the university but had no intention of pursuing his Ph.D. at the time and instead worked toward a Master of Science Degree. Coincidentally, the baby boomer generation, now rising to college age, began to flood colleges, creating a need for new professors across the nation. In light of this event, in 1965 Shear went on to Concord College, now known as Concord University, to work as an instructor at the school. Shear remained at Concord College for three years, and during this time, he realized that teaching was what he wanted to pursue with his life. The problem was that he lacked the Ph.D. required

to be a proper college biology professor. Shear applied to Harvard University a total of three times, and on the third try was finally admitted in 1968. His time teaching at Concord College meant that he had a pass on additional class work at Harvard and could begin work on his dissertation immediately.

Shear would work under Dr. Herb Levi as his advisor. Dr. Levi himself has an interesting story in which he escaped Germany during the Nazi take over and fled to the United States. For some time, Shear was interested in spiders and would work on documenting some spider families. Spiders, however, would not be the topic of his dissertation, but he instead chose to work with millipedes, another invertebrate taxon he had an interest in. With the support of Dr. Levi, he pursued his dissertation concerning millipedes, which when published in the Bulletin of the Museum of Comparative



(Above) Dr. Shear (center) with colleagues Kelly McAllister (left) and Bill Leonard (right) in the field in the Pacific Northwest

Zoology was nearly three hundred pages. After earning his Ph.D. from Harvard in biology he moved back to Concord College to teach there as a professor for two years. It wasn't long until Dr. Shear found himself at the University of Florida and taught there for only a year in a temporary position before moving on. While his time at the University of Florida was short, he learned that big university teaching did not suit him well, and this experience persuaded him to look for smaller colleges instead. His search eventually brought him to Hampden-Sydney College in 1974. Not only was the college small, but the community of Farmville also appealed to him and would serve as another reason he would accept the position of biology professor at Hampden-Sydney.

While at Hampden-Sydney, Dr. Shear continued his studies of spiders and millipedes. Dr. Shear also attended a variety of scientific meetings and conferences to discuss his work. At one of these meetings, he met the paleontologist Ian Rolfe. From this chance encounter, Dr. Shear learned of a unique deposit of fossils in the Catskill mountains of upstate New York which contained a variety of prehistoric centipedes and spider specimens. These specimens, dating back to the Devonian period 385 million years ago, piqued the interest of Dr. Shear. Dr. Shear began unraveling the secrets of these ancient invertebrates, and in 1982 received funding from the National Science Foundation, which would continue for 20 years supporting this line of research. Not only did Dr. Shear spend his time in this line of research, but around the same time he received a unique offer from Dr. Tappey Jones at the Virginia Military Institute (VMI). Jones was interested in studying chemicals that millipedes use as defense against predators and asked Dr. Shear to assist in the research project. His research into the prehistoric fossils and defensive chemicals utilized by millipedes led to a myriad of publications by Dr. Shear and his colleagues. He was invited to perform field work in New York State, Quebec, Scotland and England to uncover new fossils for study. Not only did Dr. Shear gain fame through his more than 250 publications, some of which received notice on the front page of the New York Times, but Hampden-Sydney also gained much prestige through his research endeavors.

Dr. Shear not only published a large library of works, but he also helped to train and inspire the students that entered into his classes. One student that he remembers fondly is Todd Flemming, a biology major. Todd took Dr. Shear's animal behavior course, and was assigned an independent research project. Looking for a potential project, Dr. Shear recommended observing the cows on the surrounding farms near Hampden-Sydney. This culminated in a unique project where Todd would take detailed notes on the individual cows and social interactions between the cows. He then refined this into social relationship data between the cows. After the project Todd continued into the entrepreneurial world and experienced great success, but he never forgot the help and commitment of Dr. Shear. He not only donated to the development of the Flemming Center for Entrepreneurship, but dedicated a biology room in the new Pauley Science Center to Dr. Shear.

Another student of Dr. Shear was Sasha Rabchevsky, a student with whom he worked closely. Rabchevsky suffered a serious motorcycle accident-causing injury to his spinal cord and needed to stay home to recover. Wanting to graduate with his class, Rabchevsky and Dr. Shear collaborated to send classwork back and forth and keep him up to date on his course work. Rabchevsky recovered from his injury and graduated with the class of '88 thanks to Dr. Shear and his help. Rabchevsky went on to graduate school and now studies ways to heal spinal cord injuries.

Dr. Shear retired in 2015, marking an impressive fifty years of teaching, with forty-one of those being at Hampden-Sydney. In those 41 years at Hampden-Sydney he taught nearly two thousand students introductory biology, not to mention countless biology majors who studied under his guidance.

Today, Dr. Shear still puts out research papers from his own personal lab in his home. Much of his work now still focuses on the very creature he began his career with, and he is currently working on a paper concerning the millipedes of the Pacific Northwest. He has already identified, named and described over 450 previously undiscovered species, both living and fossil. Among his other hobbies, Dr. Shear spends many hours maintaining his garden. He is also a student of martial arts and earned the rank of 5<sup>th</sup> degree black belt (Go-dan) in Shorinryu karate. Dr. Shear has been a man of many talents, and has been exposed to a variety of unique opportunities, working with colleagues in paleontology, systematic biology, chemical ecology and other specialized fields. His achievements and impact on the college will remain in his many publications and in the Pauley Science Center.

## Robert Herdegen, Ph.D. Psychology

Dr. Robert Herdegen was a longtime psychology professor at Hampden-Sydney who was part of the community for 39 years before his retirement in 2020. While most professors tend to stick to one specific field that interests them, Dr. Herdegens interests have included a wide range of psychological literature and experiments. Dr. Herdegen, in addition to his mastery over psychology, also helped to build up the psychology major at Hampden-Sydney, allowing it to flourish into a dynamic and unique program at Hampden-Sydney to educate the psychology majors of tomorrow.



Dr. Herdegen began his journey with an undergraduate degree at the small College of Rockford in Illinois, which today is Rockford University. Rockford College was a liberal arts college and taught the young Herdegen the value and importance of a liberal arts education, but also instilled in him a passion for smaller colleges. At the time Rockford College only had 600 students on campus and a total enrollment of 1000 students and maintains similar numbers of students to that of Hampden-Sydney today.

His first few years at the college were spent experimenting with a variety of courses to find what he wanted to pursue. His interest was piqued by an introduction to psychology class where he was exposed to the basic principles of psychology. The class inspired him to pursue the subject further and he soon found himself in a senior independent study focusing on psychology. During his independent study, he learned to build custom testing equipment or develop new techniques that had not yet been explored.

After college, he took a gap year before entering graduate school to work at a home for disabled children. His time at this home inspired him to continue his research of the human mind, but also exposed him to teaching young minds. His experience at the home provided an excellent basis for his future career in teaching. Shortly after his time in the home for the disabled, he found his way to the University of Delaware. He spent four years at the University of Delaware working in a lab dealing with understanding the factors that influence the processing of emotions in animals, and the role of fear in escape and avoidance learning. Here, he learned, tested, and studied how rats would associate certain stimuli with the floor of the cage becoming electrified and how they would use learned information to avoid the shock. Herdegen would also be teaching at the Philadelphia College of Textiles and Science while crafting his dissertation. After a few short years Herdegen would be seeking employment as a professor with his new Ph.D. in tow.

In his search to find a college of employment, he considered his time at Rockford College, especially the smaller size of the school. A timely opening for new psychology professors at Hampden-Sydney, especially for an experimental psychologist, brought Dr. Herdegen to Farmville, Virginia, to begin teaching at Hampden-Sydney in 1981.

Dr. Herdegen was part of a new generation of professors to arrive on campus as a large wave of staff had previously retired; and with a large inbound class, they needed to fill in the gaps. While many of the science classes were held in Gilmer, at the time psychology classes were held in Bagby Hall, since it was still not entirely regarded as a science yet. As a result, Dr. Herdegen and the rest of the psychology department were relegated to the aging Bagby Hall to carry out their studies and research. Dr. Herdegen was not dissuaded by the minimal facilities that Bagby provided and in collaboration with another newly hired professor of physiological psychology set out to create an animal testing laboratory in the shell of Bagby Hall. They set about making repairs, purchasing necessary materials, or scavenging parts and pieces when money was tight. They applied for grants to help the burgeoning lab and finally, after much work, there was a functioning psychology rat lab in the basement of Bagby.

In addition, he and the rest of the psychology department at the time would make a number of changes to the actual psychology major on campus. The most pronounced change would be the introduction of an independent research project, which was meant to assist young psychology students in honing their skills in the field. Over the years, this independent research project would gradually morph into the Senior Seminar Course, which is required of all psychology majors, but It still follows and serves the same purpose it did all those years ago.

In the coming years Dr. Herdegen would research a variety of subjects, but he did follow certain themes that would affect his research in the years to come. Much of his research would be conducted on behavior and motivation and would involve numerous psychology students working alongside him to make the research endeavor a reality. One of the major lines of research would look at how the degree of effort required to complete one task, such as a logic problem, would affect the test subject's motivation for performing a subsequent unrelated task, such as writing a short essay. Through many trials, it was found that subjects given the more difficult problems to start would be more motivated to write a proper and higherguality essay than those who were given the easier problems to solve.

Another line of research was how music played a role in motivation. A student working in collaboration with Dr. Herdegen pursued this question and would perform the experiment by having the participants ride an exercise bike as hard as they could for 10 minutes. While performing this task, some listened to music while others listened to white noise, and some listened to nothing at all. It was discovered that those who were given music rode farther than those given white noise or nothing at all. From this research, it was inferred that music serves a dual function as both a distractor from the discomfort of physical exercise and as a motivator for the person listening.

These projects were not the only thing that Dr. Herdegen had an interest in, and he would oversee many more in the following years. These projects would range from selfmotivation experiments to statistically determining how students would perform in college given their high school records. The college performance project was done with Dr. Mossler who was also in the psychology department at the time. He continued his lines of research until 2004, when he was given the title of associate dean of faculty. He served the college faithfully in this position for four years and then spent another four years as the dean of faculty. After his eight-year stint in college administration he returned to the psychology department for the remainder of his time at Hampden-Sydney and continued his work where he left off.

In addition to all his efforts in researching various elements of psychology he would also fulfill his duties as a professor by teaching a myriad of psychology courses throughout his time at the college. One of the most popular courses was the Psychology of hunger, eating, and food. To craft the course Dr. Herdegen pulled out material from a wide range of psychological subdisciplines to make a course that would explore in depth how individuals are affected genetically, neurologically, and culturally in regards to their eating patterns and abnormalities. Dr. Herdegen would consider this class among his favorites to teach along with the many students who have gone through the course as well.

Dr. Herdegen retired from Hampden-Sydney in 2020, marking the end of his 39 years in education. While his original plans were to begin traveling the world and seeing places that he had always dreamed of, the pandemic began to lockdown the world around the same time as he retired. Dr. Herdegen has started to travel once again as the pandemic has passed and he plans to keep traveling the globe. He has also been repairing and maintaining a collection of British and French bikes that he works on in his free time.

Dr. Herdegen worked with the college for 39 years to improve the standards of the

psychology program on campus which are still in place today, helping to guide psychology students to success. Dr. Herdegen is especially happy to see that before he left, psychology has earned a place in the new Pauley Science Center built over the decaying Bagby Hall where the psychology department was previously relegated to, a fitting end to such a momentous career.