

# Operants

## A Newsletter from the B. F. Skinner Foundation

First Quarter 2013



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## *In Memoriam:*

### **Honoring the Life and Legacy of Masaya Sato (1932–2010)**



I received a phone call from Masaya's niece, who told me of his sudden death in a railroad accident. Although almost 9 months have passed since that day, I can still recall clearly her voice and what she said word for word. On that day, I was on a business trip in Nasu, about 150 miles from Tokyo. I hung up the phone and under a bright full moon drove back to Tokyo.

Masaya was born in 1932, the first and only son of his parents. His father was a famous poet and novelist who received the Japanese Order of Culture. However, for ten generations, members of the Sato family worked as medical doctors and Masaya, feeling he must continue his family's traditional line of

work, enrolled in the Department of Medicine at Keio University. Masaya later withdrew from medical school and changed his academic career to psychology. Masaya's education was built upon a strong base of experimental psychology and learning principles from his mentors, Professors Yokoyama, Hayashi, and Ogawa. Professor Yokoyama received his Ph.D. with E. G. Boring. Professor Hayashi, a professor of physiology, studied respondent conditioning with Ivan Pavlov in Russia. Professor Ogawa's main interest was perception and he was the first Japanese psychologist to conduct operant research with pigeons.

Masaya's career in psychology started with experimental research of stimulus discrimination in pigeons under the direction of Professor Ogawa.

From the beginning of his academic career, Masaya was more interested in human behavior than in animal behavior. He wanted to complete his doctoral dissertation on social behavior or verbal behavior in humans but was unable to get his mentor's permission for such a study. Though he received an excellent academic education in traditional psychological science, Masaya was primarily a self-educated behavior analyst. He prided himself in mastering behavior analysis from books and articles without a mentor.

In a symposium at ABA in 1989, Masaya read a paper entitled "Behaviorism in Japan", in which he told how and when he became a real behavior analyst. Let me share part of his paper with you.

"Nearly 30 years ago (circa 1960), I was asked to write some technical terms in psychology for an encyclopedia, terms such as *conditioning* and *behavior therapy*. The editor also asked me to define some everyday terms such as *love*, *grief*, *laugh*, *desire*, and *endeavor*. The editor wanted me to explain these ordinary words in psychological terms. At that time, Japanese psychologists, myself included, were greatly influenced by Clark Hull. After reading several books and papers by B. F. Skinner, I realized that Hull's theories were no use for explaining the variable phenomenon of human behavior in our daily life. I also realized that I needed to have a conceptual framework to reconstruct those psychological phenomena systematically. Skinner's idea of behavioral contingency was it. I began to realize the true meaning of Skinner's contribution to psychology at that time. From that time on, I have taught only behavior analysis and nothing else in my classes."

Professor Sato dedicated himself to educating students as behavior analysts and disseminating behavior analysis in Japan. Here are some examples of his efforts.

- Translating behavior analytic books into Japanese (1969)
- Inviting distinguished scholars to Japan (1972)
- Publishing original books in Japanese (1976)
- Attending ABA meetings (1979)
- Sending students to Ph.D. programs in USA (1978)
- Inviting guest professors to teach courses at Keio University (1982)
- Establishing Japanese-ABA (1983)
- Publishing a behavior analysis journal in Japan (1986)
- Holding international meetings (1992)
- Elected ABA President (1997-2000)

Masaya dedicated himself to establishing psychology as the science of behavior from a viewpoint of behavior analysis. He

always insisted that behavior analysis is the real psychology and strongly objected to behavior analysts fleeing from psychology.

Over the last 20 years of his life, Masaya presented numerous papers at ABAI and other international meetings on how to re-construct psychological phenomena in behavior analytic terms. A sample follows:

- A behavior analysis of personality (first Int'l Conference of Behaviorism, 1992)
- A behavior analysis of memory (second Int'l Conference of Behaviorism, 1994)
- A behavior analysis of Japanese culture (2000 ABAI)
- Matching to sample is not a conditional discrimination (2001 ABAI)
- 
- A behavior analysis of culture (first Int'l conference of ABA, 2001)
- A behavior analysis of conflict (sixth Int'l Conference of Behaviorism, 2002)
- Behavior analysis of social behavior (2003 ABAI)
- Tokieda's language theory and Skinner's theory of verbal behavior (2004 ABAI)

- Evolutionary psychology and behavior analysis (2005 ABAI)
- New behavioral definition of "memory" and "thinking" (2006 ABAI)
- Mand in Haiku (2007 ABAI)
- A behavior analysis of motivation and emotion (2008 ABAI)
- Instinctive behavior is neither respondent behavior nor operant behavior (2009 ABAI)
- A behavior analysis of instinct behavior (2010 ABAI)

Prior to his death Masaya started a new introductory textbook of psychology; sadly that book will be never finished. Masaya's dream was to establish his own psychology as the integration of behavior analysis and Kantor's interbehaviorism.

Over the years Masaya invited many distinguished behavior analysts to Japan. They gave lectures, symposia, and workshops at conferences and universities. Some of them taught classes at Keio and other universities. Many Japanese students and young faculty were greatly influenced by those international guest professors. Masaya always encouraged young behavior analysts through such activities.

Although Masaya was a distinguished scholar, he did not write many books and papers. *“Invitation to Behavior Theory,”* published in 1976, is the only book that Masaya wrote by himself. It has, through its many printings, impacted countless readers. It is still one of the most important books and every behavior analyst in Japan has read it. *Hanshinjutsu*, published in 1973 prior to *Invitation to Behavior Theory*, was not so popular. In English, *Hanshinjutsu* means “How to read the mind” but it is not a book on psychoanalysis. It was written for the general public to introduce respondent and operant conditioning and to analyze human behavior in daily life.

The book’s cover has a photo of Masaya’s face with the question, “What do you think this guy does next?” If you turn the cover page, you can see Masaya smiling. Masaya had a wonderful sense of humor and he enjoyed sharing it.

Masaya first attended ABA in 1979 to see B. F. Skinner and invite him to an annual convention of the Japanese Psychological Association. For 32 years thereafter Masaya attended every ABA convention and international conference and promoted mutual international friendship.

Masaya was a co-founder of Japanese-ABA, with Professor Yamaguchi in 1983. Japanese-ABA (J-ABA) started with a group of about 100 people. As of

September 2011, J-ABA had 921 active members. J-ABA has held 30 successful annual conventions, publishes an official journal twice a year since 1986, publishes a newsletter four times a year, and gives workshops and symposia for both members and non-members including high-school students, business people, animal trainers, parents, and so on. All of these activities are primarily intended to disseminate behavior analysis in Japan

Masaya was also the driving force behind three international behavior analysis meetings in Japan. The first was ABA’s second delegation to Japan in 1992. The second was the fourth International Institute on Verbal Relations in 1992. The third was the third International Conference of Behaviorism and the Science of Behavior in 1996 in Yokohama.

In recognition of such activities, Masaya Sato received the International Dissemination of Behavior Analysis Award from SABA in 1997 and gave a memorable lecture titled, “Sushi Science and Hamburger Science”.

In 1998, Masaya was elected the first, and still only non-US President of ABAAI. The result of the election surprised him, but he dedicated himself to make ABAAI a truly international organization during his term of office, because it was one of his campaign promises. Masaya made only two proposals during

his term as ABAAI President, and both were accepted. One proposal was that ABAAI’s Executive Council should include an International Representative. His second proposal was that, in addition to its annual convention, ABAAI hold an International Conference in a country other than the United States at least every 2-3 years. Professor Michael Davison from New Zealand was elected as the first International Representative, and the first International Conference was held in Venice, Italy in 2001.

From then on, behavior analysts have attended six Sato-inspired conferences all over the world and Masaya attended five of them.

In support of Professor Sato’s wishes to bring an international conference to Japan, Japan-ABA has submitted a proposal to host ABAAI’s 2015 International Conference in Japan and it was accepted. Masaya Sato made ABAAI a truly international organization.

by Naoko Sugiyama

## Profile: Grant Peterson



Grant Peterson

At 58, a known bicycle industry guy—he is a bicycle designer, owns Rivendell Bicycle Works ([www.rivbike.com](http://www.rivbike.com)). He has written three books, including the current *Just Ride: A Radically Practical Guide To Riding Your Bike*. He is also a behaviorist (and all around great guy) who uses behaviorism in his daily life as an employer and father. Here is his story

“I learned about behaviorism when I was a mediocre student in high school, and I wanted to take classes in the local community college that I wouldn’t automatically be lousy at or behind in, so I signed up for a psychology class.

The Psychology 101 instructor, Rick Risbrough was a Skinnerian.

I didn’t know that immediately, but at the second or third class, a student arrived a few minutes after the start time, apologized for being late, and Risbrough said, “You aren’t late.

Being late is impossible. You arrived at the only time you could have!” The class was amused and intrigued, and he explained that all of the things he couldn’t see that lead to the student arriving exactly when he did were beyond the student’s control, so there was perfect order to it all. It wasn’t “not being punctual” or being “careless with time” or “inconsiderate of others.”

In the course we talked a little about Skinner, Maslow, Jung, Rogers, and Freud—but Risbrough clearly was in the Skinner camp.

Our textbooks were strange, almost homemade looking books in a series called O.U.R., and they were super friendly, almost childlike introductions to principles of behavior in a question-and-answer format. I liked this Skinner stuff, and so I read *Science and Human Behavior*, and then *The Analysis of Behavior*—that book, finally let me be comfortable doubting God’s existence, after being raised to believe.

After that, I went to S.F. State, where I had another behaviorist professor, and I had my own rat and Skinner box.

I met B.F. Skinner once, too. My girlfriend and I had just ridden our bikes from California to Connecticut, and I was thinking, “Hey, B.F. Skinner’s at Harvard, not too far from here.” So I

called him and asked if I could come by, and he said yes.

My girlfriend (also a behaviorist) was chicken, but I took the bus there and talked with him in his office for maybe half an hour. We talked about nothing in particular, but about behavior, of course. I wasn’t nervous, because I’d read most of his books (I never did get through *Verbal Behavior*, although I’ve read more of it than most people who don’t have a college degree). I remember asking him if he used the same pendulum-like tea carriers they used in *Walden Two*, and he said no, while acknowledging that it was still a good idea.

In *Walden II*, the tea servers carried tea on some kind of rig supported by a length of rope or twine or strap, which muted the jarring of walking. It’s not a “behavioristic” way to carry tea, except in the sense that it would be reinforced by allowing you to fill the cups full and still not spill.

I never had a profession that directly used behaviorism because I couldn’t imagine hanging out a shingle and having customers. That was foreign and scary to me. I have a business now, but back then it seemed too foreign and weird. But, I do use it every day in the same way that everybody does, even if they don’t know it or acknowledge it.

Operant behavior is just—this is how I think of it, anyway—it’s just natural selection in



the immediate present. What to Darwin was survival value, to anybody living is just “hey, that got a good response.” Free-willers don’t like that way of talking about it, but they don’t understand the way the world works, or something.

I once went to a behavior therapist when I was still in junior college and getting jazzed about behavior. I was also a bedwetter. So I got a book called *Behavior Therapy* and read about enuresis, and everything it said made sense. I found a local behavior therapist named Laura Phillips, and she cured me in a few weeks, and I’ve been dry ever since – about forty years. It was all based on environmental cues and stimuli, not the bizarre Freudian nighttime masturbation model.

In my work as a behaviorist, I don’t see my employees or co-workers as lazy or unmotivated. If there’s a problem, I blame the contingencies, not the person, and it’s easy to change the contingencies. Owning a business as a behaviorist doesn’t mean any more to me than being nice, rewarding good efforts the way they ought to be rewarded.

I understand the inappropriateness of “ought” in that context, but I don’t approach my workplace as a Skinner Box, and I say that as somebody who has a fondness for Skinner Boxes. I mean, I suppose the whole world is one, in a way. But for me it comes down to No Aversive

Control, because (non-behaviorally) it’s just not nice, and (behaviorally) it doesn’t work, and there are consequences to ruling like a tyrant.

In my family life, my wife and I raised our two daughters with consequences. We didn’t ignore the good stuff and hoped it would continue; we reinforced it, and were reinforced right back with smiles, hugs, and more good stuff. We didn’t punish bad stuff, but we didn’t tolerate it in a slacker-parent sense. If Katie or Anna were rude, we said, “Want to try that again with a nicer tone of voice?” or whatever. We were aware, always, of not reinforcing whining, so we didn’t get any of that. Our children didn’t have tantrums in Target. We weren’t bossed around by our girls. Our family was and is full of love, and our girls are good people. They’ve both read *The Analysis of Behavior*, and we don’t talk in tongues, but behavioral vocabulary comes up often enough.

The girls know how behavior works, and it makes their lives better. Of course once you understand how behavior works, you don’t have the option to turn off your inner behaviorist. (I understand how that description is so unbehavioral.) All it means is understanding that people aren’t born stupid or evil or name your adjective.

When you understand that people are shaped by their environments, it’s easy to be kind and tolerant, or at least slightly understanding. I think behaviorism is to behavior as evolution is to body structures. I think Skinner is to behavior as Darwin is to evolution. Both behavior and bodies are shaped by contingencies, and over time the changes can be huge. One works slowly, over generations or even millennia, and the other typically takes seconds to weeks. These days the role of genes in behavior is getting a lot of play—as it should—but for the average parent dealing with an average behavior problem, gene manipulation offers nothing, and positively reinforcing actions offer everything”

## **Board Members:**

### **Per Holth**

We warmly welcome Dr. Per Holth as a new member to the Foundation’s Board of Directors.

Dr. Per Holth received his doctorate degree in experimental psychology from University of Oslo in 2000. He is presently a professor at Oslo and Akershus University College in Oslo, Norway, where the first Ph.D. program in behavior analysis in Europe was established in 2010. Dr. Holth currently serves as a

member of the editorial troika for the *European Journal of Behavior Analysis* and a member of the editorial board for *The Behavior Analyst* as well as *The Norwegian Journal of Behavior Analysis*. Over the past 25 years, Dr. Holth has authored or co-authored many peer-reviewed journal papers, contributed book chapters, and made more than 60 presentations at conferences nationally and internationally. His professional interests include the experimental, the applied, as well as the theory of behavior analysis: e.g. autism and joint attention, verbal behavior, establishment of conditioned reinforcers, behavioral variability, interlocking behavioral contingencies, treatment of drug abuse, selection principles, evidence-based treatment and teaching, and animal welfare.



Per Holth

“My name is Per Holth. I live with my wife and our youngest daughter outside of Oslo, Norway, and I am currently a professor of behavior analysis at Oslo and Akershus University College. A brief version of how I got into behavior analysis is this: Things that interested me when I grew up were often labeled “psychology.” Naturally, then, when entering the University, I signed up for psychology. I enjoyed the Pavlov and the Skinner stuff, but I could never understand why their conditioning principles seemed totally left out of the rest of psychology. Too often, I could simply not figure out what psychology teachers were talking about and, clearly, the teachers themselves had similar difficulties.

So, I was considering switching to mathematics when a fellow student told me that he was reading a book by Skinner, called *About Behaviorism*. He strongly recommended the book, and I took his advice. That solved my main problems with psychology and, from then on, I translated whatever I could from psychology into behavior analysis. What I could not translate in any useful way, I was happy to discard. After the completion of elementary courses, there was a waiting list, and one typically had to wait for one year before proceeding with the advanced coursework. During that year, I took elementary courses in phi-

losophy where we could put together our own curriculum, and I decided to put most of Skinner’s books and articles into mine. For a whole year, then, I could concentrate on specializing in Skinner’s writings and be well prepared for (i.e., inoculated against) the very anti-behavioral curriculum, and teachings in general, at the psychology department.

When Skinner visited Norway in the summer of 1983, I had just completed my education as a psychologist, and most of my work there was on operant stuff as I had spent a lot of time in Terje Sagvolden’s rat lab. Strangely, when I had the pleasure of being seated next to Skinner at a dinner party, I found it terribly difficult to come up with anything suitable for a conversation. Finally, I just asked him whether he had ever met Watson. The answer was “No”, and that was that. A few weeks later, I read Skinner’s autobiographic paper in the *History of Psychology in Autobiography* series, and found the following: “I never met or even saw Watson.” So, I should have known!

I was lucky to see the enormous potential of applied behavior analysis while working with youths with developmental disorders, and while program director of an early intervention center for children with autism. Next, my doctoral work at the University of Oslo was con-

cerned with stimulus equivalence. After that, I was a researcher at the Norwegian Institute for Alcohol and Drug Research, and at the Norwegian Center for Child Behavioral Development, before joining the Institute of Behavior Analysis at Oslo and Akershus University College full time from 2006. Two years ago, the opportunity arose to get back into rat lab research and, thanks to Iver Iversen, I learned how to program my own experiments. Some of our recent projects with students have been concerned with conditioned reinforcement, behavioral variability, and with continuous repertoires. In some fun side projects, we have taught rats to play a keyboard

(<http://www.youtube.com/watch?v=fyHJxZB3pMs>), and to press levers with their hind paws ([http://www.youtube.com/watch?v=-\\_uhRyuQiUk](http://www.youtube.com/watch?v=-_uhRyuQiUk)). Recently, I have started collaborating with Kristiansand Zoo and Amusement Park. I am looking forward to upcoming projects on contingencies that produce collaborative behavior in chimps and in orangutangs, and contingencies for different activity schedules (“enrichment”) for giraffes and for tigers.

Beyond that, I am, of course, particularly pleased to be joining the board of the B.F. Skinner Foundation. For those of us who have seen some of the potential of a Skinnerian science,

it is pressing to nourish that basic science of behavior for the good purpose of improving the lives of humans and other organisms.

### *Joyce Tu*

Today, nearly 1 in 88 children are affected by autism. According to the Autism Speaks website, autism prevalence figures are growing, and more children will be diagnosed with autism this year than with AIDS, diabetes and cancer combined. There is no medical detection or cure for autism. However, it has been proven that the most effective treatment for autism is Applied Behavior Analysis (ABA) treatment.

“ABA” treatment is a type of treatment in which practitioners use a set of behavior analytic techniques to teach functional communication skills, social skills, academic skills, playing, self-care skills, vocational skills, and many other necessary skills for individuals with autism to function independently in their daily lives. It also targets problem behaviors such as tantrums, aggressions, self-injurious behaviors, self-stimulation behaviors, and many other behaviors that typically prohibit these individuals to live normal lives.

These powerful analytic techniques are derived from the science that Skinner had developed. They have been applied to treat individuals with autism

worldwide since the 1960’s. Prior to the 1960’s, only 1% of persons diagnosed with autism could be integrated with mainstream society. However, recent statistics showed very promising results! They show that when young children can begin ABA treatment early, such as 2-years or younger, and can receive at least 35 hours per week of ABA treatment for as long as two years, at least 60% of them could function at the level just like their typical peers.

Researchers and practitioners has shown repeatedly that Skinner’s science changes the lives of individuals with autism in the most effective and humane way. As a way to ensure practitioners in the field of ABA to provide quality services to these individuals with autism, the Behavior Analyst Certification Board was established in 1998. This board monitors certification procedures for many behavior analysts today.

Recently, families affected by autism, as well as, professionals providing ABA services had came together and pushed for insurance coverage for ABA services. This has been a great battle for many behavior analysts and the families. Often, behavior analysts encountered issues such as the insurance companies denying ABA treatment for individuals with autism, or unclear definitions in the special education laws qualifying the



type of credential needed to provide ABA services. However, today, more than 20 states in the U.S. have passed bills that mandate insurance companies fund ABA services for individuals with autism. Furthermore, these bills also state that Board Certified Behavior Analysts are qualified professionals who should be providing ABA treatments for these individuals. Every behavior analyst knows that ABA techniques and principles are effective when changing behaviors regardless of age, ethnicity, gender, or diagnosis of the person. We have seen tremendous success when applying these techniques to individuals diagnosed with autism. At the same time, we have also seen successes when treating individuals with other disabilities, for example, individuals diagnosed with cerebral palsy, traumatic brain injury, Down syndrome or ADHD. In the future, we hope that ABA can be recognized as treatment for these other populations.

### **Snippets:**

#### **Terry Knapp**

The August 10, 1955 issue of the jazz magazine *Downbeat* contains the headline “Institute of Jazz Studies Continues Work, Growth (p. 4).” By the 1960s the Institute had become the largest archive of American Jazz materials in the world and

found a home at Rutgers University in Newark. The 1955 *Downbeat* article mentions the recent appointments to the Board of Directors; these included from the world of entertainment Steve Allen and Dave Garroway. But it also lists “B. F. Skinner, chairman of the department of psychology at Harvard University.” Did Skinner have an interest in jazz? How did he become connected to the Institute?

Marshall Stearns (1908-1966) was the founder of the Institute. He had attended Harvard College and Law School (1929-1936) and became a leading jazz critic and writer (best known for his *The Story of Jazz*, 1956). It is possible that Skinner encountered Stearns while both were at Harvard. But it is certain that they met when Skinner became chair of psychology at Indiana University in 1945.

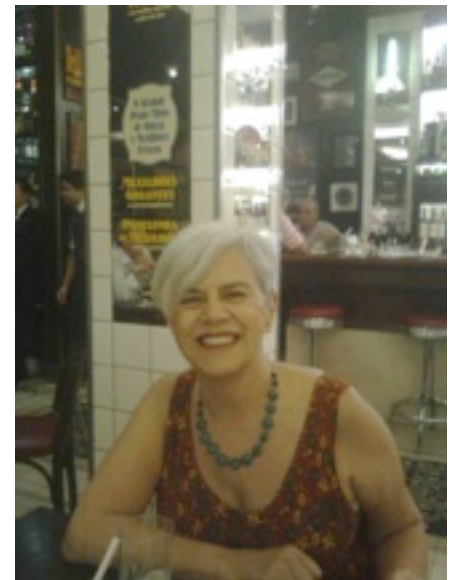
In his *The Shaping of a Behaviorists* (1979, p. 302), Skinner describes the local cultural scene of Bloomington, Indiana and reports “Marshall Stearns, a member of the English Department, had a celebrated collection of early jazz records (1979, p. 302).” Following his work at Harvard, Stearns earned a Ph. D. in Medieval English Studies at Yale (1942) and later began teaching at Indiana University. Stearns would often hold Friday evening listening sessions at his home where he would play rare jazz records. Though Skin-

ner makes no mention of it, it is possible that he attended some of these sessions. Perhaps the reference to Skinner being “chairman of psychology” is because that is the position he occupied at Indiana University when Stearns met him. Was Skinner a fan of jazz? His writings contain many references to classical pieces of music but none that I am aware of to jazz. The Institute holds Stearns’s correspondence and it may offer additional information on the relationship between the two men.

### **International:**

#### **Martha Hubner/Brazil and Teresa Araujo/Brazil**

The Foundation has two liaisons in Brazil, Martha Hubner and Teresa Araujo.



Teresa Araujo

Teresa is now retired from the University of São Paulo but she is advising students in the graduate program of USP.

A video that was edited about Skinner and education is now available in Brazil. The video is about Skinner and his main ideas of education. The final product is part of a collection about the great educators of the 20th century.

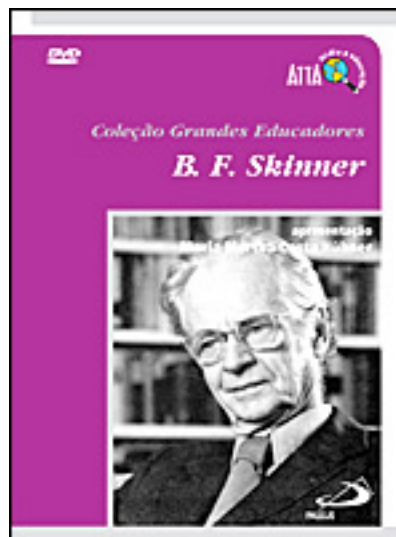


Martha Hubner

As a professor of the Psychology Institute of The University of São Paulo and professor of Experimental Analysis of Behavior and publisher of book on behavior analysis and education in 2004, Martha Hubner was invited to present Skinner's main ideas in Education. The video was produced by ATTA MÍDIA EDUCACÃO and the content presented was about Skinner's ideas on education and the importance of shaping. It also presented the side effects of the aversive contingencies in the classroom. The video starts with the main ideas of be-

haviorism and its distinction from Watson and from S-R Psychology.

The video was first distributed among the main TV channels and book stores and during many months it was presented on TV and presented again several times. At the same time it was sold in the main bookstores and more than ten thousands copies were already sold. Now it is free in youtube but it is also being sold in the virtual store of ATTA Mídia (<http://www.2001video.com.br/prduto/dvd-colecao-grandes-educadores--b-f-skinner-15071.html#UGOxGBiTq1M>) or <http://www.attamidia.com.br/index.php>.



**Eric Messick/  
New Zealand**

The Department of Psychology at the University of Waikato was founded in the then

small city of Hamilton, New Zealand in 1965. Hamilton is now home to over 200,000 people, including 12,000 University students, and the Department is now a School of Psychology. The city is located in the Waikato, a region dominated by dairy farms. The Learning, Behavior, and Welfare Research Unit (LBWRU) is situated on one of these farms only about 2 kilometers (KM) from the University. Figure 1 shows the lab from a surrounding paddock behind a lawn-mowing goat.



Figure 1

The LBWRU was established in 1971 as the Animal, Behavior, and Welfare Research Centre. It became the LBWRU in 2010 to reflect the fact that human research is, and has been, conducted as well. It was also given its Māori name, *Te Whare Tanimahota*. As the buildings were originally part of a research dairy farm, it retains its first identity as *No 3 Dairy*, as well. It is surrounded by paddocks that are often populated by dairy cows, pukeko (a native bird), and

occasionally other animals.

The first staff member, Ron Kilgour, did his PhD on maze learning in large animals at the nearby Ruakura Agricultural Research Centre, the largest agricultural and horticultural research institution in the southern hemisphere. His program of research focused on animal welfare, such as assessing food preference with cows, sheep, and other large animals. In order to encourage students to apply psychology to animal husbandry, he started a course in farm animal behavior based in the Department of Psychology at the University. He later published *Livestock Behavior: A Practical Guide* (Kilgour & Dalton, 1984). Ron emphasized the importance of high standards in animal welfare and he helped set the stage for New Zealand's current leadership in the area of animal behavior and welfare research.

In 1975 and 1976 Bill Temple and Mary Foster joined the Department of Psychology and the LBWRU after completing PhDs in Mike Davison's lab at the University of Auckland where pigeons are used as subjects. After 34 years, Bill retired in 2009. Mary has been the longest-serving staff member at the lab at 37 years and is the current director of the Unit. Other University-based staff over the years included Lindsay Matthews, Jan Scown, Cath Sumpter,

Maree Hunt, Catherine Blackman, and Tina McAdie. Several researchers from the Ruakura Agricultural Research Centre have also been involved.

In the 35 year period from 1977 through 2012, staff at the LBWRU have trained approximately 131 Masters students, 24 PhD students, and many undergraduates; have published over 100 publications; and have given many conference presentations. The work has involved a wide range of species serving as subjects and covers a variety of applied- and basic-research areas.

When Bill and Mary began working at the lab in the 1970s they started to do research on the most available species in the area—cows. However, cows were large and expensive to keep so they began working with hens. For both species and others since, equipment had to be custom-built. Figure 4 shows Mary and Bill in front of custom-built operant chambers for hens in the 1980s.



Figure 4



One of the hen operant rooms.

Hens are housed nearby and typically six hens serve as participants for each experiment. The lab works cooperatively. Students take turns running the lab and collect data for all experiments.

Presently, the most commonly used subjects are hens (about 150 including some roosters) and brushtail possums (about 26). Brushtail possums were brought to New Zealand from Australia in 1840 and have had catastrophic effects on native bush and birds due to their consumption of leaves and bird eggs, including kiwi eggs.

Hence, they are considered pests and are the focus of population-control programs as they now number over 30 million. Jenny Chandler, lab technician, typically traps possums when subjects are needed.





Jenny feeds a sultana to a possum during the reversed night cycle in red light.

Each possum is individually housed in a cage that also serves as an experimental chamber with an enclosed sleeping area at the top and operant equipment at the front. The equipment is typically one or more levers, a food hopper, and lights or audio equipment.



A possum responds on a lever.

Hens are often raised on site and are occasionally sourced from farms or elsewhere. Free eggs abound and some donated to charities for people requiring help with food. Hens tend to be individually housed in home cages and spend time in an operant chamber each day. Some have been in 24-hour experiments with the experimental equipment in their large home cages.

There is also a free-range area where hens can roam in the company of other hens and the occasional goat.

Most hens retire to a farm following their research careers at the lab. Our oldest hen was named Barney. When she was three she fell into a sump outside where Jenny found her unconscious. The vet pronounced her dead. However, Jenny found that she was still moving a bit, so warmed her with a fan heater and a hot pad. Her color returned and she made a miraculous full recovery and lived to be 13!

Other subjects have been: cows, horses, cats, chimpanzees (at the Wellington Zoo), dogs (brought in by their owners for sessions), goats, pigs, kea (alpine parrot endemic to New Zealand at the Hamilton Zoo), pigs, sheep, and of course humans.

The type of research conducted has spanned across several basic and applied areas. Animal behavior has been investigated in areas such as prefer-

ence (food, social, sounds), psychophysics (auditory and visual discrimination, thresholds), matching and concurrent schedules, behavioral economics, reinforcement effects, stimulus control, delayed matching to sample, memory, enrichment and, peak shift. Interesting animal-research questions: In order to lead cows back to an automated milker from a far-away paddock, what color should the discriminative stimuli be?—yellow. When sounds such as music, a water hose, poultry shed noises, and a train are played, will they bias responding (i.e., are any of these sounds aversive for hens?)—the sound of a commercial poultry shed caused the most bias; music, the least. If hens may wait in the presence of another hen or no hen at all prior to consuming food, where will they wait?—hens wait in the presence of another hen more often than no hen at all. In New Zealand, infra-red cameras are often used to video kiwi and other native birds at night. Could infrared light be a discriminative stimulus for possums (i.e., like an “eat here” sign)?—yes.

Human behavior has been investigated in the areas of teaching (including precision teaching), special needs, acceptance and commitment therapy, and parenting, and other areas. Some human research questions are as follows: Does rate or number of practices matter? Can we use

precision teaching to teach basic skills in individuals with mild intellectual disabilities?

Techniques used in the treatment for autism have also been investigated and shown to be effective, such as using video modeling to teach social skills.

Additionally, several staff from Waikato and other New Zealand Universities participated in a review of behavioral interventions for the *New Zealand Autism Spectrum Disorder Guideline*.

Due to the broad range of species and research areas, lab technicians and researchers are challenged in building the equipment and creating the software required to run experiments. The lab has a history of innovative solutions to the practical problems that occur during research, for example, the goat feed preference.



This equipment was used to generate a feed preference scale for goats in the 1980s.

Food was delivered in the hopper following responding on the plates above each hopper. Goats

both hoofed and nose-pushed the machine.

Similar equipment was used for generating a preference scale for cows.



Lindsey Matthews shown with a molasses-dispensing machine for cows in the 1980s.

Equipment was needed to measure consumption in order to calculate bias when the molasses mixtures contained various amounts of medications and supplements. When buckets were used before this equipment was built, cow drool ended up in the buckets and made it impossible to measure amount consumed. The pictured equipment solved the problem with metal nipples. In an innovative experiment on dust bathing in hens, equipment needed to somehow make two different dust-bathing substrates available contingent upon key pecks.

The solution is shown below.



As part of a concurrent-schedules approach, this chamber had keys that, when pecked, moved the chamber and hen over top of one of two substrates. It was outfitted with safety alarms and a switch that stopped the machine if the hen got stuck.

It was found that peat moss was associated with more responding than wood shavings or sand and, in a later experiment, straw more than feathers.



This is a hen pushing the custom-built scrum machine in the 1990s.

A *scrum* is when rugby players crouch and push each other to get possession of the ball (New Zealand is a rugby nation. The All Blacks won the Rugby World Cup last year!). In the picture, a hen is a subject in a resurgence experiment where scrum pushes are occasionally reinforced with wheat. Similar devices were used in behavioral economic research that changed the force required to operate the machine in order to investigate unit price.





A hen pushing the custom-built scrum machine in the 1990s

Horses nosed the left and right levers when shades of blue, green, red, and yellow appeared on the screens above a lever. Responding was sometimes reinforced by food from the hopper in the middle when horses responded on the side of the colored stimulus (and not the other grey stimulus). Hidden behind the food hopper sat Tania Blackmore, who controlled the experiment. Tania found that blue gained stimulus control over nose presses for all horses; red, for all horses but not to criterion; and yellow and green for some horses. Many other pieces of interesting equipment have been made including enrichment devices for chimpanzees at the Wellington Zoo, and for kea at the Hamilton Zoo, a mechanical wheel that rotated stimuli in a series of experiments investigating discriminative control of 3D objects vs. pictures of those objects for hens, and many other pieces of equipment.

Today, staff at the LBWRU include Mary Foster, Lewis Bizo, James McEwen, Nicola Starkey, and Eric Messick.

There are about 12 Masters students and 8 PhD students. Current animal research is in the areas of timing, behavioral economics and demand, preference, schedule control, motivating operations, and variables that affect dog training.

Human research is currently focussing on behavioral variability, classroom behavior, and the effects of reinforcement on exercise. The School of Psychology also has Board Certified Behavior Analyst (BCBA) and psychologist training program run by Mary Foster and Eric Messick. This program began in 2005 and has produced over 25 New Zealand registered psychologists (who practice behaviorally), some of whom are BCBAs. The School will be making its BCBA coursework available online in 2013. We are always interested in people researching and studying with us and are happy to show visitors around.

### ***Acknowledgments***

The LBWRU would not be the fascinating, productive lab that it is if not for the many people who have contributed to it. Thank you to its initiator, Ron Kilgour; to former University-based staff including Bill Temple, Cath

Sumpter, Maree Hunt, Catherine Blackman, and Tina McAdie; to former Ruakura Agricultural Research Centre staff; to our current laboratory technicians, Jenny Chandler, Rob Bakker, Andrew Malcolm, and Allan Eaddy; to former technicians and staff; and of course to all of the students.

### ***Skinner's Corner:***

**Skinner's Corner will feature summaries of Skinner's position on a number of topics still relevant today. This feature begins with Skinner's Chapter 12: "Behavior and the Nervous System" in *The Behavior of Organisms*.**

### ***The Behavior of Organisms***

*In what follows, the quotes are by Skinner. The non-quoted material is my "extension" of what he said.*  
E.A.Vargas

On the independence of the science of behavior from the science of neurology, Skinner states the matter about as clearly as it can be stated: "In regarding behavior as a scientific datum in its own right and in proceeding to examine it in accordance with established scientific practices, one naturally does not expect to encounter neu-

rones, synapses, or any other aspect of the internal economy of the organism.” He goes on to examine over the next several pages the necessary tasks of neurological analysis at its own level.

But even for the science of neurology “a rigorous description at the level of behavior is necessary for the demonstration of a neurological correlate.” He points out what is entailed. “The very notion of a ‘neurological correlate’ implies what I am here contending—that there are two independent subject matters (behavior and the nervous system) which must have their own techniques and methods and yield their own respective data. No amount of information about the second will ‘explain’ the first or bring order into it without the direct analytical treatment represented by a science of behavior.”

In short, we are dealing with different phenomena. When we observe behavioral events, we are observing people walking, writing, talking, and so on, as well as observing other organisms eating, running, meowing, and so on. We note patterns in the rise and fall of the employment rate. We verify whether a de-

posit has cleared and do so by examining our bank balance.

Observing a synaptic connection *differs* in domain of observations from observing a financial transaction at the bank. Depending on observation technique, when we observe the firing of neurons we see colors in differing brain regions or patterns of lines in an oscilloscope. We do not see letters or numbers. The correlation between behavioral and neurological events reveals possible relations, but not the “stuff” (or if you prefer, the events) that constitute the other.

As with neurology, Skinner argues against the same tendency to reduce explanations of behavior to the activities of physiological systems. As he states: “No merely endocrinological information will establish the thesis that . . . thought is chemical”.

A thought is verbal behavior. Observing the secretions of the adrenal glands does not tell you what people are thinking, much less saying, or how they got to the point of saying what they do say. The same asymmetry lies between the physical and behavioral sciences. All events may be physical but a subset

of them need a behavioral medium, such as a culture, for their effect.

The text forms of music, printed notes, are not the sound forms, pressure waves, of music. The first requires a behavioral medium (the printed note is rather recent in Western history); the second, a physical medium (air is the common one). Can one be more basic than the other? The issue is irrelevant. Without a culture there is no music and without air there is no wave pressure. As with the physical and biological sciences, the behavioral sciences must seek their explanations as well as pursue their descriptions within their own dimensional system of analysis. Skinner analysis illustrates his non-reductionist position.

Skinner ends with arguments for an independent “science of behavior”; a vision he pursued throughout the entirety of his scientific career.

## ***Organizational:***

### ***Scholarship Winners***

***Julie Vargas***

***Award Winner:***

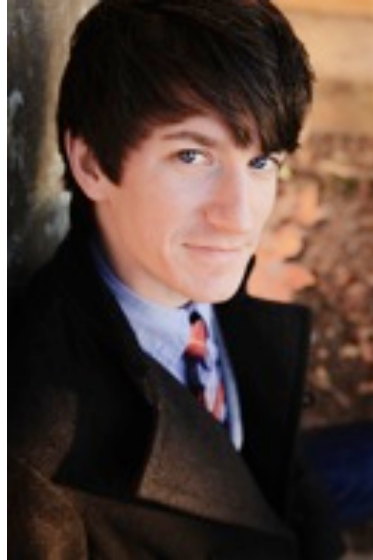
***Alison Morley***



Alison Morley recently graduated with a M.A. from the University of the Pacific, and will be starting a Ph.D. program in School Psychology at Syracuse University this Fall.

### ***Foundation Scholarship Winners:***

***Jonathan Fernand***



California State University

#### **The Effect of Choice Between Non-preferred Foods on the Food Consumption of Individuals with Food Selectivity**

Given the previous research on the advantageous effects of providing choices on noncompliance to demands and escape-maintained behavior as well as the limited research on providing choices within a feeding context, the current study evaluates the effect of providing a choice between non-preferred edible items on the food consumption and problematic mealtime behaviors of individuals with food selectivity.

Further, this study aims to assess the importance of the preference for items within a

choice array when used as a treatment for food selectivity as well as evaluate, if necessary, the role of choice as an antecedent manipulation in mediating the negative side effects induced by escape extinction. This study will help to develop future research regarding the implementation of antecedent interventions as an alternative to consequence-based interventions for the treatment of food selectivity.

Future studies will be able to use the current research as a preliminary foundation in examining alterations to choice components on the food consumption of individuals with feeding disorders.

Finally, the outcome of this experiment may impact how clinicians utilize choice components when treating food-related problem behavior.

***Byron Miller***

University of the Pacific

#### **Behavioral Assessment of Physical Activity in Young Children**

The prevalence of people who are classified as overweight and obese in the United States is currently at epidemic proportions, with an adult and child combined overweight and obesity prevalence at 68% and 32%, respec-

tively (2010 ). Physical activity is a class of observable behavior. The current study will evaluate an antecedent based functional analysis for physical activity in both solitary and group contexts. Additionally, a concurrent chains procedure will be used to assess activity preference in order to identify possible counter therapeutic activity preferences. Results of the current study will further validate the functional assessment methodology. The current study will assess outdoor activities commonly available in primary education institutions. The results obtained from this study will further extend research on function-based assessments of physical activity, and will be used to inform subsequent interventions to increase physical activity.

### President's Column



2012 was a busy year. For me the greatest achievement was bringing back Skinner's book *Contingencies of Reinforcement*. Many people helped with the work involved. Dave Palmer wrote the new foreword, and an excellent foreword it is.

Maureen Murphy, the Foundation administrative assistant, spent frustrating hours clearing permissions for the eight articles that had originally been published in journals. Several individuals and companies contributed money for the printing, including the Society for the Experimental Analysis of Behavior (SEAB). The book will be available this year.

Requests for new translations of Skinner's books continue. Usually the Foundation requests samples before authorizing a translation just to make sure that the translation accurately represents the original.

The Foundation's international liaisons arrange for these evaluations. But what do you do when asked about a translation when you have no one to evaluate the translation? That happened when the Foundation was asked to permit a Lithuanian translation of *Walden Two*. The Foundation granted permission without the usual review, and we received a copy in April.

This year Joyce C. Tu, a Foundation Director, approved a translation of *Beyond Freedom and Dignity* into Chinese. It should be printed soon. A request for a French translation of *Verbal Behavior* was received from André Gonthier-Werren. He already translated *Science and Human Behavior* and also *Walden Two* into French and did a fine job. His translation of *Ver-*

*bal Behavior* is sure to be first rate.

A Swedish translation of *Walden Two* came out in the fall, and Greek and Norwegian translations of *Beyond Freedom and Dignity* are in process.

Interest in Skinner's work also shows in requests for moving footage. This year we provided a few minutes of the video (on our website) of Skinner shaping a pigeon turn for a French documentary *Les Memoires d'un Ecolier*. The footage of a pigeon pecking a boat from Project Pigeon was also requested, this time for a DVD of a program called *Weird Weapons*. Many requests are received for websites to accompany textbooks.

One of the most unusual requests in 2012 was for audio only. Early in his career, Skinner made an auditory equivalent of the "ink-blot" Rorschach test. Skinner recorded vague speech-like sounds, and named the recording the "Verbal Summator."

In 2012, a group at Harvard requested the audio as part of a display about projective tests. Passing through displays about the Rorschach, one came to a room with black walls filled with chairs. There Skinner's indistinct voice could be heard mumbling something like "ooh ee ah ah orly, ooh ee ah ah orly" over and over. You can hear the audio on the Foundation website at:



<http://www.bfskinner.org/bfskinner/Audio.html>.

The listener is to tell what the speaker is saying. Like comments on visual stimuli, the listener's report was supposed to reflect his or her own thoughts, since the sounds were nonsense syllables.

The Foundation has many projects in the works, and we are always interested in suggestions from our readers.

Julie S. Vargas

### ***Current Directions:***

#### ***Atlantic Article***

David Freedman of *The Atlantic* wrote an article on recent innovations that use behavioral modification to help people alter their lifestyle to make more health conscious decisions like lose weight or quit smoking. He discusses some of the new weight loss programs, including one developed by Michael Cameron, showing how new technology can make these techniques more available to the public.

By using the internet, algorithms and smart phones, people can track calories, and activities easily, and garner reinforcement directly from their own social circle by linking in social media platforms. Some of the bad press and misrepresentations that have followed BF Skinner

and operant conditioning are also discussed.

This article can be read at:

<http://www.theatlantic.com/magazine/archive/2012/06/the-perfected-self/308970/>

*The Atlantic* Editors comments can be seen here:

<http://www.theatlantic.com/magazine/archive/2012/06/what-man-can-make-of-man/308973/>

### ***Events:***

**We welcome information from behavioral organizations.**

#### ***HABA 2011***

2011 Conference of the Hoosier Association for Behavior Analysis

The 2011 HABA Conference had much to offer in demonstrating the viability of Skinnerian science its three areas: applied/technological, theoretical/ conceptual, and experimental research. Most of the presentations concerned applied behavior analysis. Among them was the keynote address by Dr. Susan Wilczynski, past Director of the National Autism Center and currently a professor at Ball State University, who spoke on "Becoming Critical Consumers of Evidence-Based Practice Guidelines."

Moving from the applied to experimental research, Dr. Bob

Allan, professor at Lafayette College in Easton, Pennsylvania, presented his pigeon research exploring the complex interrelations of operant and respondent (Pavlovian) processes.

As for theoretical/conceptual work, Dr. E. A. Vargas, representing the Foundation, and Dr. Jerry Ulman, also a Ball State professor, discussed how Skinnerian science underlies all behavioral sciences, focusing specifically on evolutionary economics.

Overall, The record number of speakers and attendees at this year's HABA conference reflects the dramatic growth of this association in its third year—due largely to increasing demand for behavior analytic treatment of children with autism in Indiana.



## Board of Editors Columns:



Erin Bremer

Dear Reader,

We have been overhauling *Operants* and want to hear more from you. If you have a story or want to tell us how you or someone you know is using Skinnerian techniques, we'd love to know. Don't be shy! You can email us at [info@bfskinner.org](mailto:info@bfskinner.org). I'd like to thank everyone involved with helping us pull together this issue. It was great to interview Grant Peterson, who I found very amusing and candid during our interview. It was great to learn about the work Eric Messick and his colleagues are doing at the University of Waikato. And, it's interesting to hear about the past stories like Terry Knapp's jazz snippet, as well as to see where behaviorism is going in the future like the article from *The Atlantic*.

Erin Bremer



Kae Yabuki

Dear Reader,

I am very excited with the opportunity to be joining the B.F. Skinner Foundation on the Editorial Staff of *Operants*. It is my hope to help the Foundation continue publishing high quality newsletters on a regular basis.

I first learned about behavior analysis in 2000 when I took an undergraduate psychology class at California State University, Los Angeles that happened to be taught by Dr. Barry Lowenkron. I still clearly remember how passionate he was in talking about B. F. Skinner and his science from the first day of the class (although the class was not even about behavior analysis), and I was instantly interested in learning more about it. I completed my master's degree in applied behavior analysis and became a Board Certified Behavior Analyst in 2003. I am currently working as Program Director at SEEK Education, Inc. (Special Education for Exceptional Kids, Inc.) in warm Southern California where we provide a variety of services based on the

science of behavior analysis for children and adults with developmental disabilities. Through my work at SEEK Education, I had a great privilege of meeting with Drs. Julie and Ernie Vargas. I even had an opportunity to go to Japan, my home country, with them along with Dr. Jerry Shook and Dr. Joe Morrow in a beautiful cherry blossoms season in 2005. I will never forget the time we spent together at the hotel where Skinner also stayed when he visited Japan many years ago!

I look forward to working on future issues of *Operants* to continue learning about and disseminating Skinner's science.

Kae Yabuki



Eric Messick

Dear Reader,

My two dogs and I spend much of our time in Hamilton where I work in the School of Psychology at the University of

Waikato and do some private consulting and supervision for people and organizations in New Zealand and Australia. We also spend time in Te Akau, where we enjoy the beach, surf, and harbor.

I've enjoyed a diverse career in behavior analysis, applying behavioral principles across cultures and with a wide range of people, families, professionals, educators, and animals.

I try and balance working with playing lacrosse, kayaking, mountain biking, gardening, fixing and building things, and doing other active stuff with mates (and family in USA when I can).

Eric Messick



Monica Vandbakk

Dear Reader,

I am pleased to be joining the BF Skinner Foundation as a member of the Board of Editors of *Operants*. I am located in Norway, teaching behaviorism and applied behavior analysis at Oslo and Akershus University

College. I originally became interested in this area as a bachelor student in philosophy, reading Wittgenstein and Berkeley. A natural consequence was a change in my course of study, from philosophy to more psychological oriented studies. After some years as a practitioner in the field of applied behavior analysis, mostly with adults with intellectual disabilities and severe problem behavior, I am now in the educational system. I am also a board member of the Norwegian Association of Behavior Analysis (NAFO).

Besides teaching, I have many skilled colleagues and students whom I work with, and I am participating in a lab group, coordinated by Professor Per Holth. Currently we are conducting basic research on conditioned reinforcement, using rats in operant chambers.

I look forward to working on future issues of the newsletter, and hopefully, this will also be a good opportunity to improve my English (you are welcome to correct me at any time).

Monica Vandbakk

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### **Thank you for supporting the Foundation.**

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