

## Dr. Bob Bailey in Copenhagen

Brief Operant Conditioning -  
Breland/Bailey History  
Some applications



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**The First Challenge:**  
discovering the history of  
the real training art, craft,  
science, and technology  
in the world around us!

Separating fact from speculation,  
reality from myth!

2

What was the first animal movie to  
receive an Academy Award?



### 1947 *Bill and Coo*

George Burton made a movie  
with an all-animal cast, mostly  
love birds and parakeets.

The 61 minute movie was made  
in 1947. It was unique, and won  
a special Academy award.

I recommend every trainer see  
this movie.

We should be humble and see  
that others discovered 60 years  
ago.

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Before there was  
science or modern  
technology there were

# CRAFTS

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A craft usually  
accomplishes a task or  
fulfills a want or need.

Crafts seldom seek to  
discover general laws  
or principles.

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**Chemistry is a science.**

**Alchemy was a craft.**

**Alchemy was replaced by chemistry because chemistry progressed and alchemy did not.**

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**Human craft moves slowly and with many secrets, mysteries, myths, errors.**

**Human science and technology changes quickly with new information, discarding error.**

**Do you want to practice a craft or a technology?**

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**Animal training as a craft:**

**Little change for thousands of years**

**Based mostly on coercion (“corrections”)**

**Some trainers were effective.**

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**Modern animal training, especially dog training, has a**

**HISTORY!**

**Do you know the history of your craft?**

**Has training progressed over time?**

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**Humans have been training dogs for hunting, protection, and for war since before written history.**



**Dogs Of War - Middle East and Africa, about 4,000 years ago.  
Falconry – China about 4,000-5,000 years ago**

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**4,000 years ago:**

**Dogs detected odors**

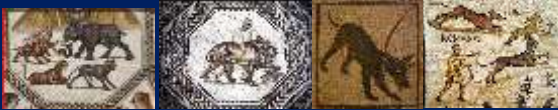
**Dogs were sentries**

**Dogs were scouts**

**Dogs attacked**

**Dogs defended**

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500BC – 200AD Greek and Roman animal training. Romans wrote training manuals.

Animal training was a business!

Middle Ages – Guild system  
Master & apprentice trainers

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Training history includes

**BEHAVIORAL BAGGAGE!**

Not everything trainers do, or have done, is logical or based on good science.

Trainers carry on a tradition of mistakes

Call it “**BEHAVIORAL MOMENTUM**” on a grand scale.

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Animal training and psychology were not related until recently.

Psychology as a science is relatively new.

Fred Skinner losing to Bird Brain



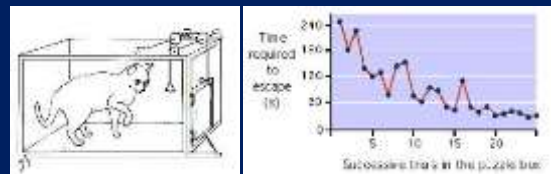
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Relationship between animal training and psychology.



Behavioral psych Pavlov  
respondent behavior 1900s

Thorndike: Law of Effect



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•In the USA, Watson studied the behavior of rats and began “behaviorism” in early 1900’s

•Watson wrongly believed that respondent conditioning was the primary modality for all animal and human learning (S-R).

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Modern Animal Training

Most would agree that modern animal training is based on operant conditioning

Most would agree that operant conditioning was described first by (Burrhus Fredrick) B.F. Skinner in **BEHAVIOR OF ORGANISMS (1938)**

Most would agree that the first animal training “practitioners” of operant conditioning were Marian & Keller Breland in 1943

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•Fred Skinner discovered a psychology that “worked.”

•Skinner modified a rat’s environment and measured certain changes in the rat’s behavior.

•Skinner was a “neo-behaviorist.”

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Marian and Keller during 1942-43

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OC leaves the laboratory

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The first “modern” science-based animal trainers

In 1943 the Brelands began training animals outside of Skinner’s laboratory.

They founded a company called Animal Behavior Enterprises



Marian and Keller Breland

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Is “clicker training” new?



Clicker trained budgy in 1943!  
Field dog 1945!

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In 1947, only the Brelands were using Skinner’s operant conditioning technology to train animals.

**1947**  
**Advertising**

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**Operant Conditioning History – the beginning**

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**The new OC technology was announced in *A Field of Applied Animal Psychology* (1951)**

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**ABE objectives:  
Training accurate behavior quickly and efficiently.  
Quality behavior at the least cost.**

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**Brelands had limited success with “traditional” animal trainers (dogs, horses, elephants, bears, etc.)  
To *them*, the Brelands were “pointy-headed intellectuals!”  
Brelands were not successful winning the hearts and minds of the academic psychology community  
To *them*, the Brelands were “Arkansas back-woods chicken trainers!”**


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**Misbehavior of Organisms  
Keller and Marian Breland  
*American Psychologist*, 1961**  
The Brelands published their findings and their view on the biological constraints of behavior (called “Instinctive Drift”)  
Operant and respondent behavior were a continuum, not dichotomous.  
Their message initially not accepted in the psychology community.

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**1940s to 1980s**  
**Dog trainers (civilian, police, and military)**  
**rejected operant conditioning**  
**as too “soft.”**

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**1962 – 1983 the Brelands and the Baileys taught the mentally retarded and autistic. In 1998, Marian received a lifetime achievement award for mental retardation research**


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**Bob Bailey personal perspective.**  
**I am a systems engineer who investigated and then pushed the fringes of the technology and made it work in the field.**



**Free Environment**  
**Stimulus Control**  
**Operational Systems**

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**Bailey at UCLA – 1954**  
**Physics (Astronomy), Chemistry, Biology**

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**1955 to 1959 I studied animal behavior in the American and Mexican deserts and at sea**

**The American western desert, about the size of Europe, was my “laboratory.”**

**A coyote den in the Mojave Desert**

**Wild pigs and mountain lions shared the mountains and deserts.**

**A Mexican dry lake bed.**



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**I learned to track animals and interpret “sign.”**

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**Animal behavior I saw in the wild was more complex than indicated in my psychology classes.**

**The Animals I saw:  
changed behavior quickly  
solved complex problems**

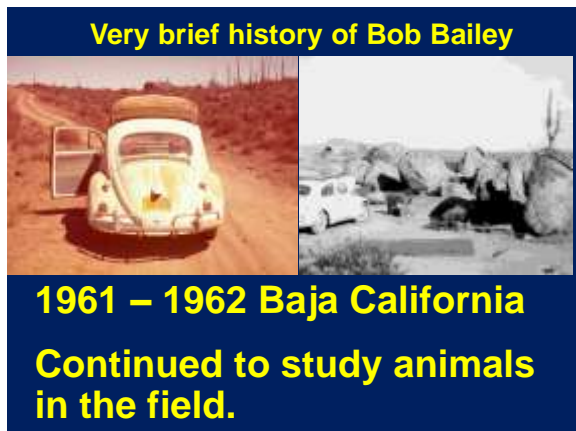
**I learned to distrust information and many of the conclusions coming from contemporary psychology laboratories**

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**I learned to distrust the formalized “schools” of psychology of the day.**

**My interpretation of psychologists behavior:  
Too much key pecking and lever pressing in a box and not enough “real world” animal behavior.**

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**I believe I had the most outstanding mentors a field biologist / animal trainer ever had. I am a product of their mentoring.**



**Marian & Keller Breland, Bob, and dolphins in Hot Springs, Arkansas USA**

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**What did this mean for my family?**



**The Baileys' never-ending search for a "new house." We had one home, but many houses.**

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## **Whiz-Bang!**

**Precise application of operant conditioning technology under demanding circumstances and requiring high level reliability.**

**Technology is the SAME!**  
Often more animal/machine interfaces.

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## **Systems Analysis and Development**

**(Whiz-Bang programs)**

Presented by  
Bob Bailey, Sc.D.



**Using behavior technology to solve difficult practical problems**

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**Animal Behavior Enterprises designed, built, and used biological SYSTEMS.**

**A system is an assembly of elements designed to accomplish a task.**

**Our systems included all of the personnel, animals, equipment, facilities, and activities needed to fulfill the system requirements.**

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**A behavioral "system":**

**The integration of procedures, methods, materials, equipment, and personnel to accomplish one or more tasks.**

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**Operational System Elements:**  
Husbandry: Animal care.  
Logistics (transport): Home to ops site.  
Staging: Onsite ops preparation  
Deployment: Launch animal.  
Excursion: Travel to the target(s).  
Guidance: Navigation to Target.  
Monitoring: Feedback  
Terminal Maneuver: activity at the target.  
Recall: Emergency return navigation signal  
Return: Target to recovery point.  
Recovery: Securing after ops  
Logistics (transport): Ops site to home.

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**Packages and targets used in dolphin training**

**Practical cues in open ocean dolphin training**

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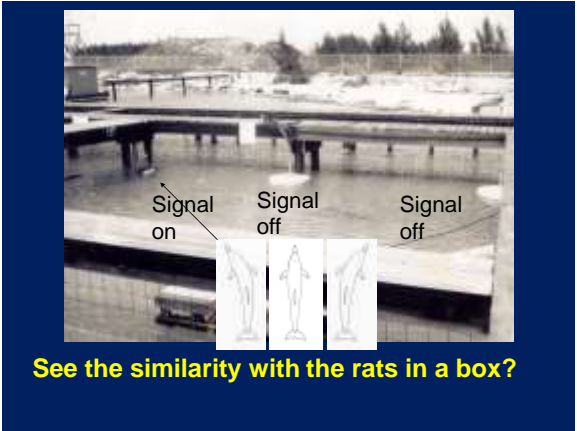
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**Example of “splitting” or simplifying**



**Gull training for the US Navy 1969**

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**Pigeon ambush detection system for the Limited Warfare Laboratory, Aberdeen MD USA**

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**One element of the Avian Mission Project (AMP) was a still camera raven.**

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**Laser + tripod + telescope**

**Launch cage assembled + recall lamp + food**

**Launch cage collapsed + recall lamp + extra food freeze dried**

**1969 AMP launch and recovery system**

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**1969 – complete system, 2 ravens, net living cages, perches, food & water dishes, food, etc. – 2 weeks in the field.. Cameras and other deliverables were always carried separately**

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**Teach personnel to use the system.**

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Your assignment, should you accept: fly a raven 400 meters to the small ventilator opening, as shown, guided only by a laser spot, deposit an object, and return, without detection.

Hint: remember, good solutions depend on good questions

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Early off-the-shelf remote guidance and camera system 2003

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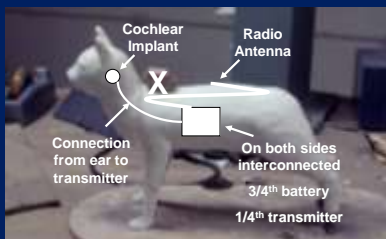
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Some real-world animal-based behavioral systems.

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### The final cat system 1968



Cochlear implant information: Dr. Robin Michelson  
Stanford Research Institute (1960s)

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Most of the USA government KGS work was done from 1965 through 1976.

There is an on-going program in Europe

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**Norwegian remote detection 2005**

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**Whiz-Bang!**

**Technology is the SAME!**

Often more animal/machine interfaces.  
Two dogs simultaneously

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**Canine Carryable Robot Cameras**



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**It has been a privilege to work  
my colleagues in Europe.**

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**Simon Prins, program leader & Bob Bailey @  
Omaha Beach, Normandy, France**

**It has been a privilege to work  
my colleagues in Europe.**

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**THE END  
of LECTURE**



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