

Operants



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It is fitting that *OPERANTS*' offices are located just a minute's walk away from the Harvard University main gate. In 1928, 24-year-old BURRHUS FREDERIC SKINNER entered through this gate to start his graduate studies

We invite you to join us on a trip in space and time to take a look at who and what influenced SKINNER and what lead to the discovery of OPERANT conditioning and to the birth of the new science known today as BEHAVIOROLOGY



from the
president



Ogden Lindsley once warned that crabgrass needs to be constantly weeded out or it will take over an entire field. He was alluding to the field of Skinnerian science with the crabgrass being sloppy language. That crabgrass is still a threat even in our own community.

It is easy to slip into inaccurate language. Skinner himself wrote sentences in which “reinforcement” is used incorrectly! In *The Technology of Teaching*, for example, Skinner talks about reinforcing students! Readers of *Operants* know that reinforcement does not reinforce a *person*, it reinforces whatever the individual is *doing*. Skinner made that distinction repeatedly. Knowing how procedures work enables teachers to better time events to improve behavior.

In some cases, pulling out crabgrass is as easy as deleting words. By removing the two crossed-out words in the next sentence, you correct the statement: “To help Johnny, the teacher reinforced ~~him for~~ raising his hand.” Even where a correction requires adjusting an entire sentence, our field deserves the effort. Talking and writing carefully will keep our scientific analyses clear and our practices effective.

Julie S. Vargas, Ph.D.
President, B. F. Skinner Foundation

Chinese Simplified Translated by Kiwiya Zhang

Ogden Lindsley曾告诫我们，若不除尽杂草，它们将占领整片田地。这里的田地指的是斯金纳行为科学，而杂草则是草率的语言。在我们ABA的领域里，“杂草”仍然是个威胁。

人们很容易使用不精确的语言。连斯金纳自己都曾误用“强化作用”这个词！在《教学技术学》一书中，他竟谈到强化学生！Operants的读者们知道，强化作用并不是作用于个体，它作用于一个人在干的事，而斯金纳多次强调过这个区别。了解强化原理的教师能选择更好的时机来帮助学生们改进他们的行为。

在一些情况下，简单地删除一些词就可以拔除杂草。例如在下面这句话中，删除两个字就能改正其表达方式：“为了帮助Johnny，老师强化他去举手。”即使正确表达需要调整一整句话，在我们领域这种努力是值得的。谨慎的谈话和书能写让我们的科学分析更加清晰、让我们的实践更加有效。

Filipino Translated by Michael Abarca

Minsan ng nagbigay ng babala si Ogden Lindsley na ang mga damo ay kinakailangang patuloy na ginugupit kung hindi ay sasakupin nito ang buong lupain. Ang kanyang tinutukoy ay ang larangan ng Skinnerian science, ang mga damo bilang ang mga pabayang wika. Ang damong iyon ay isa pa ring banta, kahit sa ating mga sariling komunidad.

Napakadaling magbitiw ng maling salita. Kahit si Skinner ay nakapagsulat ng mga pangungusap kung saan ang “reinforcement” ay maling nagamit! Halimbawa, sa The Technology of Teaching, si Skinner ay nagsalaysay patungkol sa pagbibigay gantimpala sa mga mag-aaral! Ang mga mambabasa ng Operant ay nakaaalam na ang gantimpala ay hindi para sa tao kung hindi sa kung ano ang nagawa nito. Iyon ay paulit-ulit na binigyan ni Skinner ng pagkakaiba.

Ang kaalaman kung paano gumagana ang mga kaparaanan ay nagbibigay sa mga guro ng mas maayos na panahon upang mapabuti ang asal.

Sa ibang kaso, ang pagbubunot ng damo ay kasing dali ng pagbura ng salita. Sa pamamagitan ng pagtanggap ng dalawang na-ek-is na mga salita sa susunod na pangungusap, tinatama mo ang mga katagang: “Para matulungan si Johnny, ginagagantimpalaan siya ng kanyang guro sa tuwing magtataas siya ng kamay.” Kahit na ang isang pagtatama ay nangangahulugan na baguhin ang buong pangungusap, ang ating larangan ay karapat-dapat sa pagsisikap na ito. Ang pananalita at pagsusulat ng tama ay magpapanatili ng malinaw na mga scientific analysis at epektibong kasanayan.

French Translated by MarieCelina Clemenceau

Ogden Lindsley avait averti une fois que les mauvaises herbes devraient constamment être éliminées, autrement elles pourraient envahir un champ entier. Il faisait allusion au domaine de la science de Skinner, ces mauvaises herbes correspondant aux terminologies négligées. Ce type de mauvaises herbes est toujours une menace, même dans notre propre communauté.

Le glissement vers un langage inexact est facile. Skinner lui-même a écrit des phrases dans lesquelles le terme de “renforcement” est utilisé à tort! Dans The Technology of Teaching, par exemple, Skinner parle de renforcer les étudiants! Les lecteurs de Opérants savent que le renforcement ne renforce pas une personne, il renforce ce que l'individu est en train de faire. Skinner a fait cette distinction à plusieurs reprises. Savoir comment les procédures agissent permet aux enseignants de mieux programmer les événements pour améliorer le comportement.

Parfois, retirer les mauvaises herbes est aussi facile que supprimer des mots. En supprimant le mot barré dans la phrase suivante, vous corrigez la déclaration: «Pour aider Johnny, le professeur le renforce quand il a levé la main.” Même si une correction nécessite d'ajuster une phrase entière, notre domaine mérite cet effort. Parler et écrire avec précision permettra de garder nos analyses scientifiques claires et nos pratiques efficaces.

German Translated by Natalie Werner and Silja Wirth

Ogden Lindley warnte einmal, dass Fingerhirse konstant gejätet werden muss, oder sie wird das gesamte Feld übernehmen. Er bezog dies auf das Feld der Skinner'schen Wissenschaft, in der die Fingerhirse eine nachlässige Sprache repräsentiert. Die Fingerhirse stellt immer noch eine Gefahr dar, auch in unserer Gemeinschaft.

Es ist leicht in ungenaue Sprache abzugleiten. Skinner selbst schrieb Sätze, in denen er den Begriff „Verstärkung“ falsch benutzte! In The Technology of Teaching spricht Skinner beispielsweise davon, Schüler zu verstärken! Die Leser von Operants wissen das Verstärkung nicht die Person verstärkt, sondern, was auch immer die Person tut. Skinner nahm diese Unterscheidung wiederholt vor. Abläufe zu kennen ermöglicht es Lehrern Ereignisse besser zu zeitlich zu planen, um Verhalten zu verbessern.

In manchen Fällen, ist das Herausziehen von Fingerhirse so einfach wie das Streichen eines Wortes. Entfernt man die beiden durchgestrichenen Wörter im nächsten Satz, so korrigiert man die man Aussage: „ Um Johnny zu helfen, verstärkte der Lehrer ihn für das Aufzeigen.“ Auch dann, wenn durch eine Korrektur ein ganzer Satz neu arrangiert werden muss, verdient unser Feld diese Mühe. Sorgfalt in Wort und Schrift hält unsere wissenschaftliche Analysen klar und unsere praktische Arbeit effektiv.

Greek Translated by Katerina Dounavi

Μια φορά Ο Ogden Lindsley προειδοποίησε ότι τα αγριόχορτα πρέπει να ξεριζώνονται συνεχώς αλλιώς θα καταλάβουν όλο το χωράφι. Αναφερόταν στον τομέα της επιστήμης του Skinner και τα αγριόχορτα ήταν ο ανακριβής λόγος. Αυτά τα αγριόχορτα εξακολουθούν να αποτελούν απειλή, ακόμη και στη δική μας κοινότητα.

Είναι εύκολο να ολισθήσει κανείς στην χρήση ανακριβούς λόγου. Ο ίδιος ο Skinner έγραψε προτάσεις στις οποίες ο όρος “ενίσχυση” χρησιμοποιήθηκε λανθασμένα. Για παράδειγμα, στο βιβλίο “Η Τεχνολογία της Διδασκαλίας” ο Skinner ανέφερε την ενίσχυση των μαθητών. Οι αναγνώστες του Operants ξέρουν ότι η ενίσχυση δεν ενισχύει ένα άτομο, ενισχύει αυτό που το άτομο πράττει. Ο Skinner έκανε αυτήν τη διάκριση επανειλημμένα. Η γνώση του πώς λειτουργούν οι διαδικασίες επιτρέπει στους δασκάλους τον προγραμματισμό των γεγονότων με τρόπο που βελτιώνει την συμπεριφορά.

Κάποιες φορές είναι τόσο εύκολο να ξεριζώσουμε τα αγριόχορτα όσο εύκολο είναι να διαγράψουμε λέξεις. Αφαιρώντας τη λέξη που έχει διαγραφεί από την επόμενη πρόταση, διορθώνεται η δήλωση: Για να βοηθήσει τον Γιάννη, ο δάσκαλος τον ενίσχυσε που σήκωσε χέρι.” Ακόμα κι όταν μια διόρθωση απαιτεί να ρυθμίσουμε ολόκληρη την πρόταση, ο κλάδος μας αξίζει την προσπάθεια που απαιτείται. Το να μιλάμε και να γράφουμε με προσοχή θα διατηρήσει τις επιστημονικές μας αναλύσεις ξεκάθαρες και τις πρακτικές μας αποτελεσματικές.

Hebrew Translated by Shiri Ayzazo

אוגדן לינדסלי פעם הזהיר שצריך לנכש יבוליות דשא בתכיפות, אחרת הו ישתלטו על כל השדה. הוא רמז לשדה המדע הסקינריאני, ולישימוש בשפה מרושלת כיבוליות הדשא. יבוליות אלו הן עדיין איום, אפילו בתוך הקהילייה שלנו.

זה קל מאוד למעוד אל שפה שאינה מדויקת. סקינר בעצמו כתב משפטים בהם השימוש במילה "חיזוק" אינו נכון! בטכנולוגיה של ההוראה לדוגמה, סקינר מדבר על לחזק תלמידים! קוראי אופרנטס יודעים שחיזוק לא מחזק את האדם, אלא מחזק משהו שהאדם עושה. סקינר עשה את ההבחנה הזו שוב ושוב. הידיעה כיצד הליכים פועלים מאפשרת למורים לתזמן אירועים טוב יותר על מנת לשפר התנהגות.

לפעמים הוצאת יבוליות הדשא הינה קלה כמחיקת מילים. את המשפט הבא ניתן לתקן על ידי הסרת המילה המחוקה: "על מנת לסייע לגיוני, המורה חיזקה אותו על הצב-עתו". אפילו במקומות בהם תיקון דורש התאמת כל המשפט, השדה שלנו ראוי למאמץ. שיח וכתובה זהירים ישמרו על הבהירות של הניתוחים המדעיים שלנו ועל היעילות של הפרקטיקות שלנו.

Hindi Translated by Smita Awasthi

ओग्डेन लिंड्सले ने एक बार यह चेतावनी दी, कि जंगली घास की यदि समय से निराई ना की जाये तो वह समग्र खेत पर छा जायेगी। वे स्कीन्नेरियन विज्ञान के क्षेत्र की ओर इंगित कर रहे थे जहाँ जंगली घास अनुपयुक्त भाषा थी। परन्तु जंगली घास हमारे सम्प्रदाय के लिए अब भी खतरनाक है।

हम कभी भी अनुचित भाषा का प्रयोग कर सकते हैं। स्किनर ने स्वयं कई वाक्य लिखे जिनमें "रीइन्फोर्समेंट" शब्द का उपयुक्त उपयोग नहीं हुआ! उदाहरण के लिए, अध्यापन तकनीकी में, स्किनर ने विद्यार्थी को "रीइन्फोर्स" करने की बात करी! ओपेरन्ट्स के पाठकों को ज्ञात है कि रीइन्फोर्समेंट से व्यक्ति को सद्बुद्ध नहीं किया जाता, यह व्यक्ति के व्यवहार अर्थात कार्यकलाप को सद्बुद्ध करता है। स्किनर ने इस अंतर को बहुधा जताया। कार्यविधि ज्ञात होने पर शिक्षक घटनाक्रम को समयबद्ध बनाकर व्यवहार में वृद्धि ला सकते हैं।

कुछ स्थितियों में जंगली घास को निकालना उतना ही आसान है जितना शब्दों को हटाना। अगले वाक्य में कटे शब्दों को हटाने से तुम वाक्य को सही कर सकते हो। "जौनी की मदद करने के लिए, शिक्षक ने उसको हाथ उठाने के लिए रीइन्फोर्स किया"। यदि हमें संशोधन करने के लिए पूरे वाक्य को भी बदलना पड़े तब भी हमारे कार्यक्षेत्र के लिए यह प्रयास सार्थक रहेगा। सावधानी से सही शब्दों का प्रयोग करते हुए वार्तालाप करने या लिखने से हम वैज्ञानिक विश्लेषण और अभ्यास दोनों में ही प्रभावक होंगे।

Italian Translated by Anna Luzi

Ogden Lindsley una volta disse che la gramigna doveva essere costantemente estirpata altrimenti avrebbe invaso l'intero campo. Al-ludeva al campo della scienza di Skinner, intendendo per gramigna l'uso di un linguaggio sciatto e non pertinente. Oggi la gramigna è ancora una minaccia per la nostra comunità.

E' facile scivolare in scelte terminologiche imprecise. Skinner stesso ha scritto frasi in cui il termine "rinforzo" viene utilizzato in modo errato! Nella tecnologia dell'insegnamento, per esempio, Skinner parla di "rinforzare" gli studenti! I lettori di Operans sanno che il rinforzo non ha la funzione di "rinforzare" una persona, ma il comportamento che essa sta mettendo in atto. Skinner ribadì molto spesso questa distinzione. Conoscere bene come funziona il processo, consente agli insegnanti di ottimizzare i tempi per ottenere miglioramenti nei comportamenti. In alcuni casi, estirpare la gramigna è facile quanto cancellare le parole. Ad esempio, cancellando le due parole sottolineate nella frase suc-cessiva, si può correggere l'intera affermazione: "Per aiutare Johnny, l'insegnante lo ha rinforzato per l'alzata di mano".

Anche se una correzione richiede di riformulare l'intera frase, questo vale lo sforzo allo scopo di mantenere pulito il nostro campo. Porre attenzione a come si parla e a come si scrive garantirà infatti che le nostre analisi scientifiche siano chiare e le nostre pratiche efficaci.

Japanese Translated by Naoki Yamagishi

ヒメシバという植物は常に取り除かないと、すべての地面を乗っ取ってしまう、とオグデン・リンズレイはかつて警告しました。彼はスキナー学派の科学という地面における、ずさんな言葉遣いというヒメシバについて示唆したのです。そのヒメシバは我々のコミュニティにおいても、いまだ脅威です。

不正確な言い回しをするようになるのは簡単です。スキナー自身も「強化」を不正確に使っていたのです!たとえば「The Technology of Teaching (教育工学)」という著書において、スキナーは生徒を強化することについて話しています!Operantsの読者は、強化は人を強化するのではなく、個人がすることを強化することを知っています。スキナーはこの区別を繰り返し行っています。さまざまな手続きがどのように機能するのかを知ることで、教師は行動を改善するためのより良い環境事象になります。

ある場合には、ヒメシバを取り除くのは単語を削除するぐらい簡単です。"To help Johnny, the teacher reinforced him for raising his hand." (訳者注:「him for」を削除することで、「ジョニーを手助けするために、教師は手を上げている彼を強化した」という文章を、「ジョニーを手助けするために、教師は拳手を強化した」という文章に変化させています。)ある修正は文章全体を調整する必要があるけれど、私たちの領域ではそれをやる価値があります。注意深く話し、書くことで、科学的分析が明確になり、実践が効果的になります。

Korean Translated by Yunhee Shin

오덴 린슬리(Ogden Lindsley)는 지속적으로 뽑아야 할 잡초의 일종인 바랭이를 조심하거나 아니면 그 땅 전체를 싹엎어버리라고 하였던 적이 있습니다. 그는 영성한 말로 바랭이식의 스키너의 지지자들에 대한 과학의 장을 암시하였던 것입니다. 바랭이는 여전히 우리 스스로의 공동체에서 위협적입니다.

부정확한 언어에 빠지기는 쉽습니다. 스키너 그 자신도 이런 문장을 썼습니다. "강화제(reinforcement)"는 부정확한 사용이다! 예를들어, The Technology of Teaching에서 스키너가 강화 받은 학생들이라고 말한 것과 같은 것 말입니다. Operants의 독자들은 강화제가 사람을 강화하지 않는다는 것을 알아야 합니다. 강화는 개인이 무엇을 했는지를 강화합니다. 스키너는 반복해서 이러한 차이를 만들었습니다. 어떠한 절차로 일하는지를 안다는 것은 교사들에게 행동을 증진시키는 더 나은 시간적 사건들을 가지게 합니다.

어떤 경우에는, 바랭이를 뽑아버리는 것이 문구를 삭제하는 것만큼 쉬울 수 있습니다. 다음 문장에서 두 단어를 삭제함으로써 당신이 이야기하고자 하는 것을 정확하게 진술할 수 있습니다. "조니(Johnny)를 돕기 위해, 교사는 그가 손을 들 때 그를 강화해야 한다" 바르게 하기 위해 심지어는 전체문장을 바꾸어야 할지도 모릅니다만, 우리 분야에서는 그러한 노력이 가치 있다고 봅니다. 신중하게 받아들이고 쓴다는 것은 우리의 과학적 분석을 더욱 명료하게, 우리의 실천을 더욱 효과적이게 유지할 것이기 때문입니다.

Norwegian Translated by Monica Vandbakk

Ogden Lindsley formante engang at ugress stadig må lukes bort, ellers vil det overta hele feltet. Han henviste til feltet av Skinneriansk vitenskap hvor ugresset representerte et upresist og slumsete språk. Ugresset er fremdeles en trussel, til og med innen vårt eget fellesskap. Det er fort gjort å bruke et unøyaktig språk. Selv Skinner skrev setninger hvor «forsterkning» er brukt feilaktig! I The Technology of Teaching snakker Skinner for eksempel om å forsterke studenter! Lesere av Operants vet at forsterkning ikke forsterker en person, men forsterker hva personen gjør. Skinner gjorde denne distinksjonen ofte. Ved å vite hvordan prosedyrer fungerer, er det enklere for lærere å administrere hendelser for å forbedre atferd i akkurat rett tid.

I noen tilfeller er luking av ugress like enkelt som å slette et ord. Ved å fjerne de to overstrøkne ordene i neste setning, vil du få et korrekt utsagn: «For å hjelpe Johnny, forsterket læreren ham for at han løftet armen.» Vårt felt fortjener også rettelser selv om det krever justering av hele setninger. Snakking og skriving med nøyaktighet vil gjøre våre vitenskapelige analyser klinkende klare, og vår praksis effektiv.

Polish Translated by Monika Suchowierska-Stephany

Swego czasu Ogden Lindsley ostrzegał, że chwasty należy regularnie wypleniać, bo inaczej zarosną całe pole. Mówiąc to, odnosił się do pola nauki skinnerowskiej, z chwastami w postaci nieprecyzyjnych sformułowań. Problem ten nadal istnieje, nawet w środowisku analityków zachowania.

Łatwo jest dopuścić się niedokładności językowych. Niejednokrotnie sam Skinner niepoprawnie używał pojęcia „wzmacnianie”. Na przykład, w książce „Technology of teaching” Skinner pisał o wzmacnianiu studentów! Czytelnicy Operants wiedzą, że nie wzmacniamy osoby, tylko zachowanie prezentowane przez daną osobę. Skinner niejednokrotnie wyjaśniał tę różnicę. Wiedząc, jak działają procedury wzmacniania, nauczyciele są w stanie lepiej je wykorzystać, aby polepszyć zachowanie ucznia.

W niektórych przypadkach „wyrywanie chwastów” jest proste i polega na zmianie kilku słów. W następującym zdaniu: „Chcąc pomóc Jankowi, nauczyciel wzmacnił go za podnoszenie ręki do odpowiedzi” wykreślenie dwóch słów i dodanie dwóch innych poprawiło zdanie na: „Chcąc pomóc Jankowi, nauczyciel wzmacnił podnoszenie ręki do odpowiedzi przez chłopca”. Nawet gdy poprawka wymaga większych zmian w tekście, dodatkowy wysiłek opłaca się. Użycie precyzyjnego języka (mówionego i pisanego) pomoże w osiągnięciu klarowności analiz naukowych i efektywności praktycznych oddziaływań.

Russian Translated by Alexander Fedorov

Огден Линдзи однажды предупредил, что сорняки нужно постоянно уничтожать или они захватят все поле. Он намекал на поле Skinnerianской науки, где сорняком является небрежный язык. И этот сорняк по-прежнему представляет собой угрозу, даже в нашем собственном сообществе.

Допустить небрежность в словоупотреблении очень просто. Даже сам Skinner писал предложения, в которых термин «подкрепление» использовался неправильно! Например, в книге «Технология обучения» Skinner говорит о подкреплении учеников. Читатели Operants знают, что подкрепление не подкрепляет человека, оно подкрепляет то, что он делает. Skinner неоднократно проводил это различие. Знание того, как работают процедуры, позволяет учителю улучшать время событий, чтобы совершенствовать поведение.

В некоторых случаях вырывать сорняки так же просто, как удалять слова. Убрав два зачёркнутых слова в следующем предложении, вы его исправите: «Чтобы помочь Джонни, учитель подкрепил ~~его~~ за поднятие его руки». И даже когда исправление требует коррекции всего предложения, наша область заслуживает того, чтобы попытаться. Если мы будем говорить и писать осмотрительно, мы сохраним наш научный анализ ясным, а наши действия – эффективными.

Spanish Translated by Emmanuel Alcala, Gonzalo Fernández, Kenneth Madrigal, Nikkolai Rairan Gamaliel Saldivar, and Elberto Antonio Plazas

Una vez Ogden Lindsley nos advirtió acerca de la necesidad de arrancar constantemente la maleza de raíz, o esta podría apropiarse de campos enteros. Con esto él aludía al campo de la ciencia Skinneriana, refiriéndose con “maleza” al lenguaje ordinario; dicha maleza aún es una amenaza, incluso dentro de nuestra propia comunidad.

Es fácil caer en este lenguaje carente de precisión. ¡Incluso el mismo Skinner escribió algunas frases en las cuales “reforzamiento” es usado incorrectamente! Por ejemplo, en La Tecnología de la Enseñanza (The Technology of Teaching, título original en inglés); Skinner hablaba de reforzar a los estudiantes! Los lectores de Operants saben que el reforzamiento no refuerza a una persona, refuerza aquello que sea que el individuo esté haciendo. Esta distinción fue hecha por Skinner en múltiples ocasiones. El saber cómo los procedimientos funcionan, permite que los profesores mejoren la temporalidad de los eventos, para así mejorar las conductas.

En algunos casos, arrancar la maleza puede ser tan fácil como borrar algunas palabras. Al eliminar las palabras tachadas en la siguiente frase se puede corregir el enunciado: “Para ayudarlo a Juan, el profesor reforzó ~~al estudiante~~ por levantar la mano.” Aun cuando una corrección requiera de ajustar una frase completa, nuestro campo merece dicho esfuerzo. Hablar y escribir de manera cuidadosa mantendrá el análisis experimental claro y nuestras prácticas efectivas.

Swedish Translated by Dag Strömberg

Ogden Lindsley varnade en gång för att blodhirs ständigt måste rensas bort, annars tar den över ett helt fält. Han syftade på det Skinnerianska vetenskapsfältet, med blodhirsen som slarvigt språkbruk. Denna blodhirs är fortfarande ett hot, även i vår egen grupp.

Det är lätt att halka in i inkorrekt språk. Skinner skrev själv meningar i vilka ”förstärkning” används felaktigt! I The Technology of Teaching (Undervisningsteknologi), till exempel, talar Skinner om att förstärka elever! Operants läsare vet att förstärkning inte förstärker en person, den förstärker vad individen gör. Skinner gjorde den distinktionen upprepade gånger. Att veta hur procedurer fungerar gör det möjligt för lärare att på bättre sätt kunna förbättra beteende.

Att rensa blodhirs är i vissa fall så lätt som att radera ord. Genom att ta bort de två överstrukna orden i nästa mening rättas påståendet: ”För att hjälpa Johnny förstärkte läraren ~~honom~~ för att räcka upp handen.” Även när en rättning kräver att en hel mening justeras förtjänar vårt fält den ansträngningen. Att tala och skriva noggrant kommer att hålla våra vetenskapliga analyser tydliga och vår praktik effektiv.

Turkish Translated by Hande Cihan

Ogden Lindsley yabancı otların sürekli temizlenmesi hakkında uyarıda bulunmuştu yoksa bütün alanı kaplayacaktı. Alan derken Skinner bilimini, yabancı otlar derken de bu alanda kullanılan dili kastediyordu. Yabancı otlar ise kendi camiamızda bile hala bir tehlike.

Hatalı bir dil kullanmak çok kolay. Skinner’ın kendisi bile “pekiştirmenin” hatalı kullanıldığı cümleler yazdı. Örneğin Öğrenme Teknolojisi’nde Skinner öğrencilerin pekiştirilmesinden bahsediyor! Operants okurları bilirler ki pekiştirme bir bireyi pekiştirmez, bireyin yaptığı davranışı pekiştirir. Skinner bu ayrımı prosedürlerin davranışı iyileştirmek için öğretmenlere nasıl daha iyi şartlar sağladığını bilerek defalarca yapmıştı.

Bazı durumlarda yabancı otları temizlemek kelimeleri silmek kadar kolaydır. Bir diğer cümledeki üzeri çizili iki kelimeyi silmek ifadeyi düzeltecektir. “Johnny’e yardım etmek için, öğretmen el kaldırma davranışını ~~için onu~~ pekiştirdi”. Hatayı düzeltmek için tüm cümleyi değiştirmek gerekse de alanımız çok daha fazla çabayı hak ediyor. Dikkatli konuşmak ve yazmak bilimsel analizlerimizi belirgin, uygulamalarımızı etkili kılacaktır.



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Everyone at the B. F. Skinner Foundation has been proud of the growth *Operants* has experienced. By the end of 2015, *Operants* had correspondents in over 25 countries, provided translations into more than 20 languages, and had grown from a quarterly report into a magazine. *Operants* finished the year with 7,000 subscribers, almost tripling in international exposure in just 12 months! We strive to double our readership, aiming for 15,000 subscribers by the end of 2016. You can help us by sharing *Operants* with your friends, family, classmates, students, and colleagues. Remember — it's a free subscription: just go to our website, and click on "sign up now." The only information you provide is your email address and first and last name, and *Operants* will be delivered to your inbox.

Operants has stepped up its game for you. It will increase production rate to six editions per year, releasing a new magazine every two months. We will highlight college classrooms around the world that utilize *Operants* as additional reading to enlighten their discussions. We started to produce a podcast that will complement each issue of the magazine by featuring interviews with the leaders in our field. One more new offering available for free at bfskinner.org and on Facebook is *Skinner's Quote of the Day*, moving sequentially through Skinner's *Science and Human Behavior* before advancing onto other books.

We look forward to seeing many more of you around in 2016. If you have any new ideas or suggestions, please feel free to share them with us! Just contact me: s.habarad@bfskinner.org.



Sheila Habarad
Editor-in-Chief



history

A Prologue to Skinner's Science

Ernest A. Vargas, Ph. D.
Cambridge, MA



Dr. Ernest A. Vargas is a behaviorologist and Vice President of the B. F. Skinner Foundation. His primary interests are in the history of science and in behavioral theory.

The following article is an edited version of an article Prologue, Perspectives, and Prospects of Behaviorology that appeared in Behaviorology, I, Fall 1995.

Almost 75 years ago, in the middle of February 1931, W. J. Crozier, Director of the Laboratory of General Physiology at Harvard University, received the following letter:

Dear Dr. Crozier:

At the recent meeting of the Board of National Research Fellowships in the Biological Sciences, on January 31 and February 1, a fellowship appointment for the year 1931-32 was voted to a Mr. B. F. Skinner, at present at the Psychological Laboratory, Harvard University. In accepting this appointment Mr. Skinner has indicated that he would like to work under your sponsorship at Harvard, and this arrangement meets with the approval of the Fellowship Board. May I inquire if you can receive Mr. Skinner, and if so if Harvard is also ready to remit fees and services requirements in his case? Mr. Skinner states that he would like to start upon the fellowship on September 1, 1931. If you are ready to take him, we would like to know if this date is agreeable to you also....

(Harvard University Archives,
B. F. Skinner Collection)

What is notable in the letter is that Skinner, then at the Psychological Laboratory, asked to work at the General Physiology Laboratory under the sponsorship of Crozier.

There was little doubt that approval to work in Crozier's laboratory would be forthcoming given the letter of recommendation Crozier had previously written to the National Research Council on behalf of Skinner.

December 22, 1930

Dr. Frank R. Lillie, Chairman Board of
Fellowships in the Biological Sciences
National Research Council
B and 21st Streets
Washington. D. C.

My dear Dr. Lillie,

Mr. Burrhus Frederic Skinner is making application to the Board of National Research Council Fellowships in the Biological Sciences, February 1st, for appointment to a Fellowship. In connection with this application, and in response to your

letter of December 17, I am happy to be able to indicate some of the reasons leading me to hold a very high opinion of Mr. Skinner's promise of development and of the exceptional character and of the ability which he has already demonstrated. I can perhaps do this the more freely because Mr. Skinner has been primarily working in the Psychological Laboratory and only secondarily in connection with this department. My acquaintance with him, however, leads me to state that of the predoctorate graduate students in the group which I best know he is emphatically the individual of outstanding ability, originality of thought, and fertility in the devising of experimental procedure. He is widely read, seems to me to have excellent judgment in the valuation of historical and other material bearing upon his work, and I personally value highly the independence which leads him in certain particulars to differ sharply from certain of his immediate associates in rather fundamental matters of doctrine. He is young, and with the enthusiasm not unknown among the intellectually vigorous, he is occasionally too severe and even savage in his adverse criticism of others; but I am convinced that this proceeds not from conceit but from impatience. It has appeared to me that Mr. Skinner possesses to a rare degree the ability to use his mind as a tool, and his hands as instruments of experimentation, which one so earnestly desires to find in students of promise.

Very sincerely yours,
[Crozier signature]

Professor of General Physiology
(Harvard University Archives,
B.F. Skinner Collection)

It was a professional marriage made in heaven:
Crozier—caustic, hard-driving and hard-drinking, impatient,

contemptuous of what he called organ physiology, an advocate of Loeb in biology and Mach in philosophy — and Skinner — sarcastic, radical and rebellious, impatient, contemptuous of compromisers, and eager to put the investigation of behavior on an independent scientific footing.

Crozier was not merely someone to whom Skinner reported. Crozier became a close and depended-upon mentor as indicated by this exchange of letters regarding the publication of a paper of Skinner's:

From Crozier to Skinner:

June 3, 1931

Dear Skinner:

This will acknowledge receipt of your manuscript. I hope to read it promptly. The general idea I approve. The theoretical treatment of these questions will be very much stronger and much more effective when backed up by hard analysis of new experimental results. It occurs to me that the appearance of this paper may be somewhat delayed beyond the time when you assume your N.R.C. Fellowship. In that case you may wish to indicate your status as Fellow. To do this requires permission from the Board, and the written approval of the laboratory in which you work. However, since the manuscript is completed before the first of September, 1931, it may not be appropriate to do this. I shall be glad to send the article, I think, to Murchison, but I must raise with him the problem of excessive charges which he has developed the habit (drive!) of imposing. I

shall let you know the result.

The affairs of our new laboratory are at the moment in a singularly confused state. I believe, however, that the title "Biological Institute" is formally approved.

I am greatly interested by your account of your experiments in walking. I take it that the standard graph is one obtained with gaiters. I trust that you continue to enjoy your vacation. I shall be here until June 24, after that in Vermont. I shall probably write to you again after



*W. J. Crozier, Director of the Laboratory of
General Physiology at Harvard University*

I have read your manuscript carefully. I think that it would be rather nice if you should give thanks to the management of the Boylston Hall Laboratory for whatever assistance they may have rendered you during the course of the work. These little things are frequently overlooked, but occasionally they do assist in smoothing paths.

Very sincerely yours,
[Crozier signature]
(Harvard University Archives,
B. F. Skinner Collection)

June 4, 1931

Mr. B. F. Skinner
Spooner House
Franconia, New
Hampshire

Dear Skinner,

I have read your manuscript carefully, but I wish to go over it once more. It occurs to me that it may not be the most fortunate thing to dwell with such length and emphasis on "Theory". There is much to be said for the suggestion that the theoretical matter should be allowed to express itself in more condensed fashion. and in a more natural integration with the experimental findings. I think I see what you have tried to do, in part, but I doubt if this mode of presentation will in the most general way achieve the object I believe you have in mind – because, unless factual material is made in an organic way the basis for the whole discussion, people are very likely to take the attitude that such a treatment as you have given represents merely the activity of "another theorist". I wish that you would consider this suggestion for what it may be worth. I do not insist that you adopt it. But I do feel that the theoretical discussion is too long to be effective.

Very sincerely yours,

[Crozier signature]
(Harvard University Archives,
B. F. Skinner Collection)

From Skinner to Crozier:

Prof. W. J. Crozier,
Cambridge, Mass.

Dear Prof. Crozier,
June 5, 1931



B. F. Skinner. January 30, 1931

I have received your criticism of the manuscript and am sympathetic with what you have to say. In spite of my activities of the past year I have, as I hope you believe, almost no faith in theorizing that is not clearly related to experimental material. I should prefer to experiment and publish results – nothing more. Unfortunately this is, of course, not always possible. In the present case I could deal with my data as I have in the first part of the paper – purely as a description of changes in the rate of eating. I am, in fact, willing to do this so far as the present case is concerned. However, I have on hand groups of data (in some cases enough for publication, in others needing further

corroboration) which are the result of a logical theoretical development. When I come to publish these I shall have to give the theoretical background in order to indicate the relationship.

So that the question seems to be just how much theory is required, and I wish I knew the answer. I have worked almost steadily on this paper since February writing and rewriting – and in spite of its present regrettable length nothing has gone into it that I have not at one time or another tried to leave out and failed. I had the choice in one case of merely making a reference to the Reflex paper and thus avoiding about two paragraphs of recapitulation. I decided

against this, believing that if I were to make the point at all, I might as well make it as convincingly as possible. I have criticized myself all along for the greater weight on theory, but I have answered the criticism by promising myself that this is the second and last time that it will be necessary — that I can now go on with the material at hand and present it with only an occasional reference to a position that will have been sufficiently stated.

My sole interest lies in making a consistent description of behavior, using the reflex as a principle of analysis. Unfortunately this means, as you know, that one must fight for the right to use the simplest principles of scientific method. It means not only stating a position but explaining it to the yokelry. I have been almost constantly depressed by this state of affairs, but I have managed to check the impulse to give up the theory altogether by assuring myself that, the position once stated, things will go more smoothly.

I intended to make a sort of compromise in arranging the paper as I did, with the experimental material first. I felt that in that way I was at least not forcing the theory upon the reader. I am not anxious to publish the paper as a polemic but as a simple statement of a position, so that on the one hand I can refer to it in the future, and on the other make myself and my activities clear to anyone who happens to be intelligent enough to be interested.

The whole thing seems to be one of policy. I have given it a great deal of thought and have been forced, more or less, to the present resolution of the difficulty. Even though I agree with your criticisms on every point, I still feel that the paper might better be published essentially as it stands. I promise never

to do anything like it again. That is a resolve that I have been heartily making these several months.

I shall be anxious to get your further comments, and if, in the light of this account of my motives, you are still of the opinion that publication is inadvisable, I shall readily accept that as the signal to have a try at the paper once again.

Gratefully yours.

[Skinner signature]



W. J. Crozier

Address until June 11th:
Spooner
House Franconia. N. H.

Until June 24th: 2001 N.
Washington Ave., Scranton.
Penn'a.

Thereafter: Boylston Hall
(Harvard University
Archives,
B. F. Skinner Collection)

From Crozier to Skinner:

Dr. B. F. Skinner
Spooner House
Franconia, New Hampshire

Dear Skinner:

June 8, 1931

I was not advising against the publication of your paper, as much as raising the point as to what it is expedient to do. If I were

writing this paper myself, I think that I should try somehow so to arrange its present contents that there would be a more organic connection, arising out of some logical necessity between the two sections. For instance, I would not relegate the description of the apparatus to an appendix; I would probably have a statement of the theoretical implications in very general terms in an introductory paragraph or two, and the theoretical part remaining in a section devoted to discussion. The only real criticism which I made was to the effect that it did not seem to me that the manuscript as it stands would have the effect which I take it you desire upon those who might

not agree with the logical procedure you employ. I wonder if it is really true that "one must fight for the right to use the simplest principles of scientific method"? I have never been able to see the necessity for this. I think much the better strategy is to state one's position where necessary, on the basis of results obtained and as a means of explaining why one sought to obtain the experimental findings, and to let it go at that — in other words, to take one's private metaphysics for granted. No amount of "explanation" will convert people of the sort you describe. Many of them are none the less fairly sensible human beings, and definite new knowledge in the way of experimental phenomena is bound to appeal to these; the rest are hopeless, and it is a waste of one's intellectual substance to recognize their existence. I should like to hold your paper for a day or two until you have thought of this again. If you are still of the same mind, I shall send it off to the printer.

Very sincerely yours,
[Crozier signature]

(Harvard University Archives.
B. F. Skinner Collection)

From Skinner to Crozier:

Prof. W. J. Crozier
Cambridge. Mass.

June 8, 1931

Dear Prof. Crozier.

In looking over the manuscript after a week's time, I am coming to agree with you that the present actual wordage can be cut down considerably without interfering with the thread of the argument. If you have not forwarded the manuscript will you please mail it immediately to my address at 2 Arlington Street, Cambridge, where I can pick it up the latter part of the week on my way through to New York? I can probably find time to do the necessary cutting within the week.

I'm sorry to have caused so much bother. It's not the most convenient thing in the world to maintain outside intercourse from a place like this. All of which adds to my present growing desire to get

back to Cambridge and to work. That, I suppose, indicates that I have had a perfect vacation.

Sincerely yours,

[Skinner signature]
The Spooner House,
Franconia. N. H.

(Harvard University Archives,
B. F. Skinner Collection)

The next letter that apparently follows in their correspondence is a more personal letter from Skinner to Crozier that exemplifies the sort of mutual concerns that no doubt they discussed when together.

Saturday the 25th

Dear Prof. Crozier,

Things have been going nicely since you were here, except that the acceleration due to temperature becomes strongly negative above 80 F. In spite of the heat and the distraction of furnishing an apartment. I have pretty nearly got my apparatus ready for an early start in the fall except for certain matters which will depend upon the soundproof room, etc. My present plan, therefore, is to make a gradual transfer of energy to exploring the literature and taking up certain theoretical matters, until the time arrives for a return to experimentation. I am reading Lusk on Nutrition, which in spite of the perfectly awful "digest" odor is interesting stuff. I have been looking for suitable substances to feed my rats to test the blood-sugar basis for the eating curve. I think glucose and dihydroxyacetone will do the trick. The glucose raises the blood-sugar enormously without making any immediate change in metabolic activity, and the dihydroxyacetone just the opposite. I have also been reading Mach's The principles of physical optics which is one grand book. The best summer reading I have come across. Which reminds me that Sarton asked to be remembered to you. He is going to Syria, for a year, alas! Tolman, the purposivist behaviorist, has been teaching two courses here. He has a book on purposive behavior in press. Some of the men here who were formerly with him in California tipped him off that

he was not likely to find any sympathy among the local behaviorists (using that term apart from Watson's appropriation of it) and during the past week he and I have had two long discussions. He uses the term purpose with an apparent acknowledgment that it is indefinable. I thereupon refuse to argue with him about it. But when I offer to talk about any concrete example of behavior that he will propose and to describe it in nonpurposive terms, he is at a loss to bring up a single clear cut example. Once or twice he tried it, and then cut himself short with some remark to the effect that probably the experiment should be done over before it was talked about. In other words he has come out with a blanket admission that in general he has been talking nonsense, and in fact used that term himself. He came over to the lab to look at my records and concluded that he would have to go back to California and either simplify the maze down to the level of simplicity of my conditions or else openly adopt this technique. But he still clings to a hazy mystical belief that somewhere in the behavior of the intact organism there is more than an integration of the simpler things that we deal with in our experiments. When (apropos of something else) I admitted that in such an integration it might well turn out that two and two did not add to four but to three and that we should have to construct further laws to describe how such things add, he said "Well, perhaps that's all I mean." When I then pressed the obvious point, he admitted that the simpler things must be investigated first if we are ever to know how they add. On every single argument that has come up he has capitulated beautifully. Personally he is a very pleasing fellow (is the brother, by the way, of R. C. Tolman) and I am glad to have talked with him. His publications mark him as stupid, but I am convinced that is a wrong impression. He is just a little bit lost.

Monday I am going to Provincetown to some friends of mine for a day or two. It will be a pleasant interlude before I finally move into my apartment. The latter is partly ready now and promises a reasonable amount of comfort for the coming year. I have lived a most uncivilized life for the past three years and I am anxious to return to more

livable conditions.

Daniel (husband of Mrs. Daniel) has been getting me worked up again about Raschevsky (*Zeitschrift fur Physik*). I have read only the paper on conditioning. Daniel says there are a series, on many of the reflex characteristics. Have you them? If so, I should like to take a look at them a little later in the year. There may be something there I shall need.

This letter has run to greater length than I intended when I sat down to it. Nothing in it is of importance or requires an answer. I shall be glad to hear from you, however, if letter writing doesn't mar a vacation for you.

As ever,

[Skinner signature]

85 Prescott Street. Suite 7
Cambridge. Mass.

(Harvard University Archives,
W. J. Crozier Collection)

Skinner's first articles show the effect of working under Crozier's direction. They disclose an influence that started when Skinner took a course under Hudson Hoagland, Crozier's assistant, that continued while Skinner was attached to the Psychological Laboratories, and that formalized after he moved to the Laboratory of General Physiology. There were biologically framed papers such as "chronaxie of subordination," "inheritance of maze behavior" (a review), and "eating reflexes." In this last paper, Skinner concerns himself primarily with measuring eating behavior as he was keen on quantifying his observations of animal actions. He soon moves to more behaviorological themes by relating eating behavior to what he calls its "facilitating conditions" in "drive and reflex strength" I and II. In the second of the drive and reflex strength papers, he first calls attention to a "problem box" in which a rat presses a lever. As yet, no mention of consequences appears. In his next experimental paper, "rate of formation of a conditioned reflex," he explicitly teases out the operant, or what he calls at that point, Type II conditioning. From there on in, he moves very strongly into developing the subject matter that sets the stage for a new behavioral science.

Skinner's first published article is an odd one. But it shows the direct effect of Crozier's influence. Received for publication by Crozier in June 1929 and published in 1930 in conjunction with T. Cunliffe Barnes, a senior graduate student in Crozier's laboratory, it reports an experimental study on an ant's geotropic response. Tropism is the movement orientation of an organism due to a source of external stimulation. It was a concern of Crozier's derived directly from Jacques Loeb. Tropisms were a favorite topic

of Loeb's and of Crozier's. For Skinner, however, this first published article on tropisms was his last.

Skinner's coauthored article, when a 25-year-old graduate student, is his initial and final one on tropisms. Later, five years later, in a book review of Murchison's *A Handbook of General Experimental Psychology*, in commenting on Crozier's and Hoagland's leading chapter in the book, Skinner states:

The chapter fails more seriously in supplying no set of terms suitable for the main subject-matter of the book. The concept that it deals with most extensively, the tropism, is not mentioned again on any of the thousand pages which follow. Nor could it well be used. The conceptions of an environment as a field of force and of behavior as orientation due to bilateral differences of intensity of stimulation come at an unfortunate level of organization. They are apparently not extensible upward to the more complex behavior of learning, emotion, and so on, and at the same time they are not simple enough to be of use in the analysis of such part-mechanisms as those employed in the maintenance of posture. The rest of the book, so far as it uses any common descriptive term, is based upon a concept of a quite different sort, namely, the reflex.

Evident in these remarks is Skinner's incisive grasp of a profitable strategy to pursue in the analysis of behavior. Ironically, it was a strategy derived from the biological framework of Crozier's great mentor, Jacques Loeb.

Around the turn of the century, Jacques Loeb stood out as a world famous biologist. Universities recruited him by providing special laboratories. The daily press wrote numerous stories about him. Colleagues nominated him for the Nobel Prize. He was even the prototype for a heroic scientist, Gottlieb, in Sinclair Lewis's novel, *Arrowsmith*. Loeb's work in artificial parthenogenesis, the creation of life through induced self-fertilization, demonstrated what he considered of primary importance in biological work: study the entire organism and control the conditions in which that organism functions. Adopting Mach's position that science was simply a practical way of becoming effective with one's immediate world, Loeb argued that one's premises and concepts were validated by achieved outcomes. His work with tropisms became especially significant to him for Loeb saw it as an

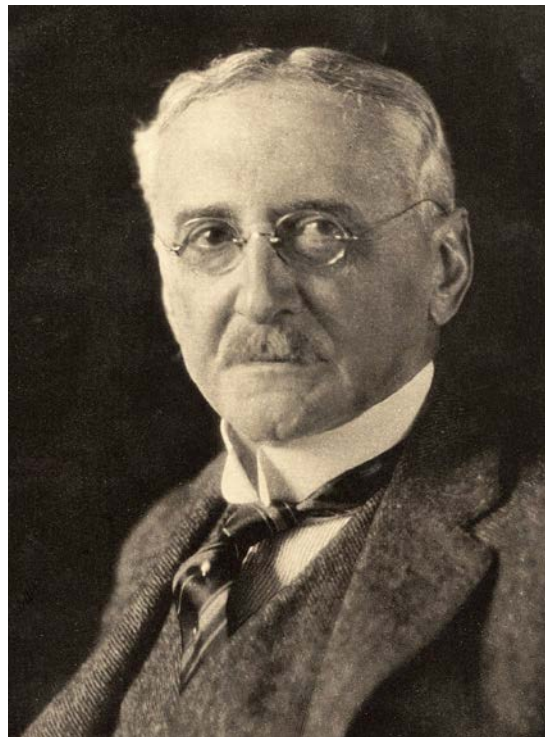
antidote to theological, primarily Aristotelian, analysis of animal behavior. For Loeb, even though the event that occurs is antecedent to the animal's action, it pulls that action forward: it does not push from behind. His experimental work on tropisms was his answer to teleological speculation.

Tropisms were the inevitable movements — what Loeb called "forced" movements — by the organism under certain physical and biochemical conditions. The term "forced" expressed Loeb's philosophical position that the organism's actions were lacking in purpose, were non-voluntary, and were not directed by an inner agency and that no vague "psychological states," as Loeb put it, dictated an animal's behavior. If an organism conducts itself a certain way, it must in terms of its conditions. To infer an agency is to reify our ignorance. As Loeb put it, "Our conception of the existence of 'free will' in human beings rests on the fact that our knowledge is often not sufficiently complete ..." And, "The analysis of animal conduct only becomes scientific in so far it drops the question of purpose and

reduces the reactions of animals to quantitative laws." Loeb emphasized that we obtain scientific knowledge only through an experimental and quantitative analysis. A thesis Skinner fervently pursued.

Skinner rejected antecedent control as the sole driving force behind the organism's behavior. "Operant conditioning may be described without mentioning any stimulus which acts before the response is made." He saw the traditional stimulus-response reflex as too simple and too physiological and therefore saw Pavlov's analysis as inadequate. He became interested in what pulled behavior forward, but interested in a pull not defined merely in physicalistic terms and not due simply to mechanistic action. He was not interested in a stimulus that yanked a response out of the organism. He was interested in what he then called the "reflex," the correlative relation between a postcedent event and an action that

the event affects. That relation, when it concerned classes of actions controlled by their consequences, became the "operant." Skinner had sought, under the philosophical influence of Mach — an influence brought to play by Crozier from Loeb — a basic unit of analysis, comparable to force in physics. He started with "reflex" and ended with "operant." What obviously did not stick with Skinner were Loeb's and Crozier's concern with tropisms. What evidently stuck with Skinner was Crozier's methodology of whole animal experimental research, Loeb's framework of biological analysis, and Mach's philosophy of science. 🐟



Jacques Loeb

W. J. Crozier and B. F. Skinner: Founding a Science of Behavior

Dr. Edward K. Morris, University of Kansas
Dr. Todd L. McKerchar, Jacksonville State University



B. F. Skinner (1904-1990) graduated from Hamilton College in 1926 with a degree in English and began a career in writing. He had a perennial interest in literature. He also had a perennial interest in technology, science, and philosophy that prepared him to found a science of behavior. Harvard's general physiologist, William J. Crozier (1892-1955), supported him in the latter, which resulted in their co-authored review of Franklin Fearing's 1930 book, *Reflex Action: A Study in the History of Physiological Psychology*. This is its history.

In his youth, Skinner became adept at gadgetry and invention, which gave him skills for building research apparatus. As a teenager, he read Frances Bacon's *Novum Organum*, which strengthened his empiricism and distrust of authority. In college, he was introduced to Jacques Loeb's *The Organism as a Whole*, which contended that behavior was lawful apart from its physiology. While struggling as a writer, he read Bertrand Russell's 1926 review of Ogden and Richard's 1923 *The Meaning of Meaning*, which abetted his operationism. He read Sinclair Lewis' 1925 *Arrowsmith*, which extolled the virtues of basic science through the character of Max Gottlieb, who was based on Loeb. When Skinner read H. G. Wells's 1927 essay championing Ivan Pavlov's new science of behavior for the world's future over George Bernard Shaw's plays, he turned from literature to psychology for his future. Prior to beginning graduate school in the Department of Philosophy and Psychology at Harvard University, he read Russell's 1927 *Philosophy*, the 1927 English translation of Pavlov's *Conditioned Reflexes*, and John B. Watson's 1928 *Psychological Care of Infant and Child*. The books he brought with him to Harvard in the fall of 1928 included Russell's *Philosophy*, Watson's 1924 *Behaviorism*, and Pavlov's *Conditioned Reflexes*. However, they were irrelevant to the department's curriculum.

The department was led by E. G. Boring, a student of Edward B. Titchener who was a student of Wilhelm Wundt, the founder of experimental psychology's first laboratory in 1879 in Germany. In Titchener's rendering of Wundt, psychology's subject matter was the mind, whose structure had to be analyzed through the introspection of its elements – images, sensations, and feelings. In Skinner's understanding of psychology, its subject matter was behavior, but behaviorism was barely represented in the department. Boring opposed it. However, he was on sabbatical when Skinner arrived, which allowed Skinner to discover the Department of General Physiology, where the books he brought to Harvard were relevant.

In contrast to organ physiology, general physiology sought the mechanisms that created and controlled the "living matter" of plants and animals as a whole. Loeb made the degree of creation and control tantamount to how well living matter was understood. He created and controlled developmental and behavioral biology (e.g., parthenogenesis, tropisms) with mechanisms that created and controlled them. He was not alone. His predecessors included Bacon, Claude Bernard, and Ernst Mach; his successors included John B. Watson and Crozier.

Born in New York City, Crozier attended City College (1908-1912) for his undergraduate studies, where he was interested in biochemistry, and then Harvard for his graduate studies (1912-1915), where he earned a doctorate in the Department of Zoology for a dissertation titled, "Studies in Sensory Stimulation." As he was completing it, his advisor, George H. Parker, introduced him



Edward K. Morris



Todd L. McKerchar

In this issue, *Operants* continues publication of a series of brief biographies on a selection of Skinner's coauthors, written by Edward K. Morris, Ph.D., and Todd L. McKerchar, Ph.D. Below is the authors' note:

Because our interest primarily lies with Skinner's lesser-known coauthors — at least lesser known in behavior analysis — we focus on them. We will attempt to do two things in each biography. First, we will provide biographical, educational, and career information for these coauthors and, if applicable, will describe their awards, honors, and major professional contributions. Second, we will attempt to describe the context of Skinner's collaborations with these coauthors as culled from various historical sources (e.g., Skinner's autobiography, the Harvard University Archives).

We should point out, however, that for many of these coauthors our biographical records are incomplete. Because they were not well-known in behavior analysis and psychology, they were unlikely to have extensive or widely-published obituaries. We have done our best to conduct thorough searches, but in some cases, we have exhausted the resources available to us. Accordingly, we encourage anyone who has biographical information on Skinner's lesser-known coauthors to please contact us.

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to Loeb, who afterward supported Crozier while he was a research naturalist (e.g., ethologist) at the Bermuda Biological Station and then at the University of Illinois Medical School, University of Chicago, and Rutgers College. In the process, Crozier became Loeb's "student." However, whereas Loeb equated the understanding of developmental and behavioral biology with their creation and control, Crozier made creation and control the means for discovering and demonstrating functional relations between biology and its interactants. Following Mach, causes were functional relations. Crozier returned to Harvard in 1925 as an associate professor and chairperson of the newly formed Department of General Physiology in the Division of Biology. He became a full professor in 1927.

When Skinner began graduate school at Harvard in 1928, he enrolled in courses in both philosophy and psychology and in general physiology. That fall, he took *Physiology 5: Behavior*, taught by Crozier's protégé, Hudson Hoagland. The course description stated: "The object is to examine the physiological mechanisms underlying **the behavior of organisms**. Especial emphasis is placed on those aspects of conduct which may be analyzed in terms of physical dynamics" (emphasis added). In it, he read Pavlov, Rudolf Magnus, and Charles Sherrington. In the spring, he took Crozier's research course—*Physiology 20a: Dynamics of Vital Phenomena*—where he and Crozier's colleague, T. C. Barnes, conducted experimental research on geotropism in ants, analyzed quantitatively. This became Skinner's first publication. Tropisms were Crozier's first field of research at Harvard. The next fall, Skinner took a second course from Crozier that was "right along my line:" *Physiology 3: The Analysis of Conduct*. In it, he wrote a critique on a 1929 article by E. M. Vicari on the inheritance of learning in mice. Crozier had him submit it to the *Journal of General Psychology*. It was published. In the spring of 1930, Skinner saw an announcement for Fearing's *Reflex Action* and bought the book.


Fearing received a Ph.D. in Physiological Psychology from Stanford University in 1926. When *Reflex Action* was published in 1930, he was in the Department of Psychology at Northwestern University, conducting research on vestibular reflexes. In his book, he conceptualized the reflex as, among other things, involuntary, unlearned, not conditioned by consciousness, and not involving the cerebral cortex. By implication, he asserted that envisaging mind and behavior in terms of reflex action and deriving "intelligence and the higher mental faculties in general from reflexes" were, respectively, futile and sterile.

According to Skinner, "This was anathema, and I wrote a vitriolic review accusing Fearing of prejudice" — prejudice in his concept of the reflex and, thus, in its implications. An alternative concept was Skinner's: The reflex was no more and no less than a correlation of a class of stimuli and a class of responses at the level of their lawfulness (e.g., predictability, control). He was advancing this concept in the theoretical portion of his dissertation, which he published in 1931. In his book review, Skinner challenged Fearing's conceptualization and its implications on principled grounds. For instance, they did not apply to all behavior, which Skinner's concept did.

He was also, as he said, vitriolic. He described the book as incoherent, unintelligible, extravagant, unconvincing, and an appeal to ignorance, as unscholarly (e.g., garbling and misreading Descartes); and as polemical. Skinner's review, though, was polemical too. Indeed, he referred to himself as one of Crozier's "arrogant bunch of youngsters." Crozier, himself, was polemical too as well as eccentric. When Skinner completed the review, he took it to Crozier, who "toned down a phrase or two...and added his name as a co-author because the paper needed more authority." It was published in the spring/summer 1930 issue of the *Journal of General Psychology*.

In 1931, Skinner was awarded his doctorate at Harvard in the Department of Philosophy and Psychology, not in General Physiology. The first two of the three readers on the signature page of his dissertation were psychologists — Carroll D. Pratt and Leonard T. Troland. Crozier was listed third, but the order is misleading. Even though Crozier was not the first-listed reader, Skinner identified him as his graduate "master," meaning advisor, at Harvard, not any faculty members in philosophy and psychology. Crozier continued to support Skinner through the 1930s. In 1931, he urged Skinner to apply for a National Research Council Fellowship in General Physiology, which he did. It was awarded, as was a 1932 reappointment. In 1933, Crozier nominated Skinner for a prestigious Junior Fellow position in the Harvard Society of Fellows, which he was awarded and retained until he left Harvard in 1936 for a faculty position in the Department of Psychology at the University of Minnesota. There, he published *The Behavior of Organisms: An Experimental Analysis*, which reported the research and systematized the concepts Crozier had supported for nearly a decade. This was the founding publication in the experimental analysis of behavior.

Crozier remained at Harvard for the rest of his career, adding to tropisms a second field of research — the effects of temperature of biological processes (e.g., oxidation, rhythms). In the mid-1930s, Crozier lost his Department of General Physiology. It was subsumed under a single Department of Biology, along with botany and zoology. He was, however, made a Research Professor of General Physiology and began his third field of research — vision (e.g., flicker frequency, threshold). During the Second World War, he served as an Operations Analyst for the U.S. Air Force in the Pacific at the equivalent rank of colonel. Afterward, he returned to Harvard and continued his research until his death, due to a heart attack, in 1955.

As for Skinner, the rest was, as they say, history except if it had not been. Shortly before Skinner enrolled at Harvard, Crozier was being heavily recruited by the California Institute of Technology. He remained at Harvard though because it was to receive a \$3 million grant from the Rockefeller Foundation for an Institute of Biology, where Crozier's laboratory would play a major role. In counterfactual history, Crozier's move to Cal Tech would have altered Skinner's contributions and career significantly, as well as the science of behavior we know today. For Skinner's science of behavior, Crozier's remaining at Harvard was a behavioral cusp. 

B. F. Skinner and Fred S. Keller: Two Lives Intertwined in the History of Science

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Science does not happen in a social vacuum. This phrase sums up one of the major transformations that occurred during the mid-twentieth century in regards to the history of science: the successive effort to assess science as a highly complex social practice. Evidence of this is in the remarkable research on the role of aspects — heretofore treated secondary in the history of science — of the scientific spread of established social relations between scientists and the various institutions, academic and non-academic, to which they are linked throughout their careers. In this new scenario, scientific discovery began to be evaluated as part of its own conditions responsible for acceptance, spread, and survival of science. Similarly, relationships between scientists are no longer treated as the backstage of the scientific community, and it has become a special phenomenon in understanding the careers of scientists and their intellectual productions. The importance of Thomas Huxley in the defense and spread of Darwin's theory of natural selection can be cited as a striking example of scientific spread due to relationships among scientists. These are central to clarify modes of reception and transmission of science.

An analogue of this remarkable episode in the history of science is also evident in the development of behavior analysis when it is observed that the relationship between Burrhus F. Skinner and Fred S. Keller resulted in a special bond between the founder of a new scientific system and its first supporter and main proponent. The recognition of the historical value of the relationship between Skinner and Keller is broad and unquestionable in the history of behavior analysis. There are aspects of that relationship that deserve attention.

A ciência não acontece em um vácuo social. Essa frase sintetiza uma das principais transformações ocorridas, a partir de meados do século XX, na historiografia da ciência: o sucessivo esforço de avaliar a ciência como uma prática social altamente complexa. Provas disso são as notáveis investigações sobre o papel de aspectos — até então

tratados como secundários na história da ciência — como a divulgação científica e as relações sociais estabelecidas entre os cientistas e as diversas instituições, acadêmicas e não acadêmicas, às quais estes se vinculam ao longo de suas carreiras.

Nesse novo cenário, a divulgação científica principiou a ser avaliada como parte das próprias condições responsáveis pela aceitação, disseminação e sobrevivência da ciência. Do mesmo modo, as relações entre os cientistas deixaram de ser pensadas como história dos bastidores do universo científico, e se tornaram fenômeno especial na compreensão das trajetórias de cientistas

e suas produções intelectuais. Exemplo marcante do papel da divulgação científica e das relações entre os cientistas, como centrais na elucidação dos modos de recepção e circulação da ciência, é a apreciável análise da função essencial desempenhada por Thomas Huxley na defesa e disseminação da teoria da seleção natural das espécies de Charles Darwin.

Um análogo desse episódio marcante, na história da ciência, se faz evidente também no desenvolvimento da análise do comportamento, quando se observa que a relação entre Burrhus F. Skinner e Fred S. Keller resultou em um vínculo especial entre o fundador de um novo sistema científico e o seu primeiro adepto e principal divulgador. O reconhecimento do valor histórico da relação entre Skinner e Keller é amplo e inquestionável na historiografia da análise do comportamento. Entretanto, há aspectos dessa relação que ainda merecem atenção.



*Life-long friends, "the Two Freds".
B. F. Skinner (left) and Fred S. Keller, 1988 (?)*

This reflection explores one of these aspects — the central role of the relationship between Skinner and Keller in the social constitution process of behavior analysis in its early decades. More precisely, through a biographical and micro-historical perspective of science, I suggest that the maintenance of academic and personal contact between Skinner and Keller denotes a unique compatibility of two personal and professional paths that have profoundly marked their careers and the history of behavior analysis.

The formation of a disciple

In 1920, after two years as a soldier in the First World War, Keller began attending college as an undergraduate student in liberal arts at Tufts College. Besides not knowing what to expect in the academic world, Keller, in his own words, “was unprepared for higher education, on both personal and academic counts, when [he] arrived at Tufts.” Therefore, he claims to have been at that time “without clear purpose or any kind of guidance; and [he] had no source of income, from family or others, on which [he] could depend.”

In order to soften the academic deficit, Keller retook the study of basic disciplines and worked in different menial jobs to mitigate his financial difficulties. The incompatibility between his work and his studies resulted in low grades and in a sense of inability to learn complex contents. Therefore, he claimed that often he was about to give up college in his first two years of higher education. The unfavorable academic standing of Keller only changed when in 1924, he came into contact with psychology. That year, as an employee of a publishing company, Keller took an advertising course in which consumer behavior had been approached from a behaviorist view. After this course, Keller bought his first book on psychology, *Psychology - From the Standpoint of a Behaviorist* by Watson, and from that moment, “was whetted for psychology and its practical applications.” Being an employee of that publishing company provided more than a contact with behaviorism. Keller developed a skill that would become essential in his career as a researcher and disseminator of behavior analysis: a clear and objective writing style, oriented toward a wide audience.

Keller’s dedication to his work in the publishing company was so significant that only in 1925, his final year as an undergraduate, did he fully retake his academic activities, deciding to get a bachelor’s degree in psychology. By targeting his training to psychology, Keller experienced a sense of intellectual security hitherto absent in his academic journey. Moreover, at that time, he assumed the position of teaching assistant, beginning the interest in activities that would mark his career and role as eminent scientific disseminator: the interest in teaching strategies that were scientifically grounded. Also in his final year of undergraduate studies, Keller was considered by different teachers as a student with significant capacity for social and academic adjustment and was thereby encouraged to apply for a master’s degree in Psychology at Harvard. This happened in the first half of 1926.

O objetivo deste ensaio é explorar um desses aspectos – o papel central do vínculo entre Skinner e Keller no processo de constituição social da análise do comportamento, em suas primeiras décadas. Mais precisamente, por intermédio de uma perspectiva biográfica e micro-histórica da ciência, sugiro que a manutenção do contato acadêmico e pessoal entre Skinner e Keller denota uma singular compatibilização de duas trajetórias pessoais e profissionais que marcaram profundamente suas carreiras e a história da análise do comportamento.

A formação de um discípulo

Em 1920, após dois anos de trabalho como soldado, na Primeira Guerra Mundial, Keller iniciou sua formação em nível superior, como estudante de graduação em artes liberais, no Tufts College. Além de não saber o que o esperava no universo acadêmico, Keller reconheceu que “não estava preparado para o ensino superior, em ambos os âmbitos acadêmico e pessoal, quando cheguei em Tufts”. Por isso, alega ter se encontrado naquele momento “sem propósito claro ou qualquer tipo de orientação; e eu não tinha fonte de renda, da família ou outros, da qual eu podia depender”.

A fim de amenizar seu déficit acadêmico, Keller retomou o estudo de matérias básicas e, para mitigar suas dificuldades financeiras, trabalhou em diferentes atividades subalternas. A incompatibilidade entre seus afazeres e seus estudos incidiu na manutenção de notas baixas e na sensação de incapacidade de aprender conteúdos complexos. Por isso, alegou que muitas vezes esteve prestes a desistir da faculdade em seus dois primeiros anos de educação superior.

A situação acadêmica desfavorável de Keller apenas se alterou quando, em 1924, entrou em contato com a psicologia. Naquele ano, como funcionário de uma editora, Keller realizou um curso de publicidade, no qual o comportamento do consumidor foi abordado a partir de uma visão behaviorista. Após esse curso, Keller comprou seu primeiro livro de psicologia: *Psychology - From the Standpoint of a Behaviorist*, de Watson, e a partir daquele momento “foi estimulado para a psicologia e suas aplicações práticas”. Como funcionário daquela editora, mais do que propiciar contato com o behaviorismo, Keller desenvolveu habilidade que se tornaria essencial na sua trajetória como pesquisador e divulgador da análise do comportamento: a escrita clara, objetiva e orientada para um público amplo.

A imersão de Keller em seu trabalho naquela editora foi tão expressiva que somente em 1925, seu último ano de graduação, retomou integralmente suas atividades acadêmicas – agora decidido a obter o título de bacharel em psicologia. Ao direcionar sua formação para a psicologia, Keller experimentou um senso de segurança intelectual até então ausente em seu percurso acadêmico. Ademais, naquele momento, assumiu o cargo de assistente de ensino, principiando o interesse por outra atividade que marcaria sua carreira e o seu papel como exímio divulgador científico: o interesse por estratégias didáticas fundamentadas cientificamente. Igualmente, em seu último ano de graduação, Keller foi avaliado, por diferentes professores, como um aluno com significativa capacidade de adaptação social e acadêmica, sendo por isso incentivado a ingressar no mestrado de psicologia de Harvard, o que de fato ocorreu no primeiro semestre de 1926.

Keller's master's and Ph.D. degrees at Harvard's Psychology Department can be characterized by three aspects: his declared adherence to behaviorism, his propensity to be a scientific disciple, and his easy social adaptation to that academic and institutional environment. The first two features are remarkable in his approach to the only behaviorist teacher with whom he had contact at Harvard at the end of his master's in 1927 — a visiting professor, Walter S. Hunter. For Keller, the seminar and discipline taught by Hunter "gave an impetus and direction to my life that had before been lacking... and most significantly for me, he was a behaviorist, as he informed us in his opening lecture." The ultimate example of Keller's social adaptation is noted when he states to have been for some time a proud pupil of the leading critic of behaviorism at Harvard, the Head of the Psychology Department, Edwin G. Boring, although this did not mean Keller's adherence to Boring's research.

Finally, on Keller's initial academic career, it is worth saying that his researches throughout his master's and Ph.D. represent his trend to be a scientific disciple since they were restricted to replication of experiments, similar to those conducted by Hunter and other behaviorist researchers. This posture changed only in the mid-1940s, when already as an adherent of the experimental analysis of behavior, he started to develop original research in the field of education.

Recognition and intellectual security in the early stage of Skinner

In 1927, the period between the end of B. F. Skinner's undergraduate studies in English language and literature and his admission into the Ph.D. program in Psychology at Harvard, Skinner himself describes as his "dark year." It is at that stage that, after unsuccessfully trying to be a writer, he chose psychology as a field of knowledge in which he would get his Ph.D. degree. Referring to his escape from an uncertain future in literature, Skinner says that he entered Harvard "not because I was a fully committed convert to psychology, but because I was escaping from an intolerable alternative." In addition, Skinner's admission to the program is marked by his incipient psychological knowledge since according to him, "College did little to further my interest in psychology. The only formal instruction I received lasted ten minutes."

Skinner entered Harvard's Psychology Department when it was in full institutional crisis. In addition to that, the Department was averse to behaviorism, a perspective with which Skinner had already identified. Skinner, who received his undergraduate degree in another area and had meager knowledge in psychology had no way of knowing all that beforehand. It is no surprise that when faced with such a reality, Skinner's was frustrated.

As it was with Keller, Skinner's first formal contact with behaviorism during his Ph.D. occurred through his participation in a course on animal learning taught by Hunter. While the psychology department was inadequate to assuage Skinner's complaints, it also

A passagem de Keller pelo mestrado e doutorado, no departamento de psicologia de Harvard, pode ser caracterizada por três aspectos: sua adesão declarada ao behaviorismo, sua propensão a ser um discípulo científico e sua fácil adaptação social àquele ambiente acadêmico e institucional. As duas primeiras características são notáveis em sua aproximação do único professor behaviorista com quem teve contato em Harvard — professor visitante Walter S. Hunter —, ao final do seu mestrado, em 1927. Para Keller, o seminário e a disciplina lecionada por Hunter "deram um impulso e direção para minha vida que tinham antes sido perdidos ... e mais importante para mim, ele era um behaviorista, como ele nos informou em sua palestra de abertura". Já exemplo máximo da adaptação social de Keller é percebida quando declara ter sido, durante algum tempo, um orgulhoso pupilo do principal crítico do behaviorismo em Harvard, o então chefe do departamento de psicologia Edwing G. Boring, ainda que isso não tenha significado sua adesão às pesquisas daquele psicólogo.

Por fim, sobre a trajetória acadêmica inicial de Keller vale dizer que suas pesquisas, ao longo do mestrado e doutorado, representam sua contínua inclinação a ser um discípulo científico, posto que foram circunscritas a replicações de experimentos, semelhantes aos realizados por Hunter e outros pesquisadores behavioristas. Postura alterada apenas em meados da década de 1940, quando já um adepto da análise experimental do comportamento, inicia pesquisas originais no campo do ensino.

Reconhecimento e segurança intelectual no percurso inicial de Skinner

O período entre o final da graduação de Skinner, em literatura e língua inglesa, e a decisão pelo ingresso no doutorado em psicologia em Harvard, no decorrer de 1927, foi descrito por ele como seu *dark year*. É nessa fase que, após uma tentativa frustrada de ser escritor, elegeu a psicologia como área do conhecimento em que se doutoraria. Referindo-se à fuga de um futuro incerto na literatura, Skinner afirma ter ingressado em Harvard "não porque eu era um convertido completamente realizado em psicologia, mas porque eu estava fugindo de uma alternativa intolerável". Além disso, o ingresso de Skinner no doutorado é marcado por seu incipiente conhecimento psicológico, posto que segundo ele, durante a graduação "A universidade fez pouco para promover o meu interesse em psicologia. A única instrução formal que eu recebi durou dez minutos".

A graduação em outra área e, por conseguinte, seu parco conhecimento sobre a psicologia, explicam porque de Skinner ingressou em um departamento de psicologia em plena crise institucional, e ainda avesso à perspectiva psicológica com a qual já havia se identificado mesmo antes de sua entrada em Harvard: o behaviorismo. Não por acaso, ao se deparar com tal realidade, as impressões de Skinner designam sua frustração com a psicologia praticada naquele departamento.

Como Keller, o primeiro contato formal de Skinner com o behaviorismo, durante seu doutorado, ocorreu por meio de sua participação em uma disciplina de aprendizagem animal, lecionada por Hunter. O que foi, contudo, insuficiente para amenizar as queixas de Skinner com respeito ao departa-

failed to see in Hunter a possible researcher model to follow. In fact, although some declared sympathy for Watsonian behaviorism, the absence of any demonstrated commitment to a psychologist or any specific perspective within the behaviorist field is unique during Skinner's Ph.D. studies.

First, it is believed that Skinner's adherence to behaviorism was related to the esteem he declared for the metaphysical commitments so common in the different behaviorist approaches such as determinism and anti-mentalism. It was in this sense that he stated in an interview in 1988: "I wasn't a behaviorist, I didn't know a thing about behaviorism, but I was a dedicated behaviorist just as a stance." But the absence of adherence to any name or behaviorist theory is also explained mainly by the early aspirations of the young Skinner in founding his own version of behaviorism, which in fact, occurred at the end of his Ph.D.

Therefore, in no way, were Skinner's early ambitions to formulate a new science of behavior mere pretense or naivety of a young doctoral student. Suffice it to say that Skinner's scientific and intellectual capabilities were quickly recognized in the Harvard environment by none other than Boring and also by the Head of the Physiology Department, William C. Crozier. The latter was responsible for inviting Skinner to migrate his Ph.D. to that department. Unlike the negative impressions of the Psychology Department, when Skinner had contact with Crozier's work and academic and institutional environment of the Physiology Department, he expressed immediate appreciation for the science practiced over there and for the privileges that were absent in the Psychology Department. He recalls, therefore, "the physiology of the nervous system is practically psychology and the facilities of the Department of Physiology are better."

In general terms, Crozier's laboratory studied behavior as a whole from the concept of the reflex. Skinner enjoyed all the scientific and institutional freedom offered to a researcher. These working conditions were treated by Skinner as ideal since he could study what he wanted without any imposition. The consequence of these conditions was that the more Skinner remained distant from the Psychology Department and was encouraged to be guided by individual interests, the more his "draft" of a behavioral science distanced itself from current canons of experimental psychology and from the physiology practiced at Harvard. In fact, was reflected in the

mento de psicologia e insuficiente para ver na figura de Hunter um possível modelo de pesquisador a ser seguido. Na realidade, ainda que declare simpatia pelo behaviorismo watsoniano, é singular na trajetória de doutorado de Skinner a inexistência de qualquer compromisso declarado a um psicólogo ou qualquer perspectiva específica dentro do campo behaviorista.

Primeiramente, supõe-se que a adesão de Skinner ao behaviorismo correspondia à sua estima declarada a compromissos metafísicos tão comuns nas distintas abordagens behavioristas, como o determinismo e o antimentalismo. Foi nesse sentido que declarou em uma entrevista em 1988: "Eu não era um behaviorista, eu não sabia nada sobre behaviorismo, mas eu era um behaviorista dedicado apenas como postura". Mas a ausência de adesão a qualquer nome ou teoria behaviorista é também explicada, sobretudo, pela precoce aspiração do jovem Skinner em fundar sua própria versão do behaviorismo – o que, de fato, ocorreu ao final do seu doutorado.

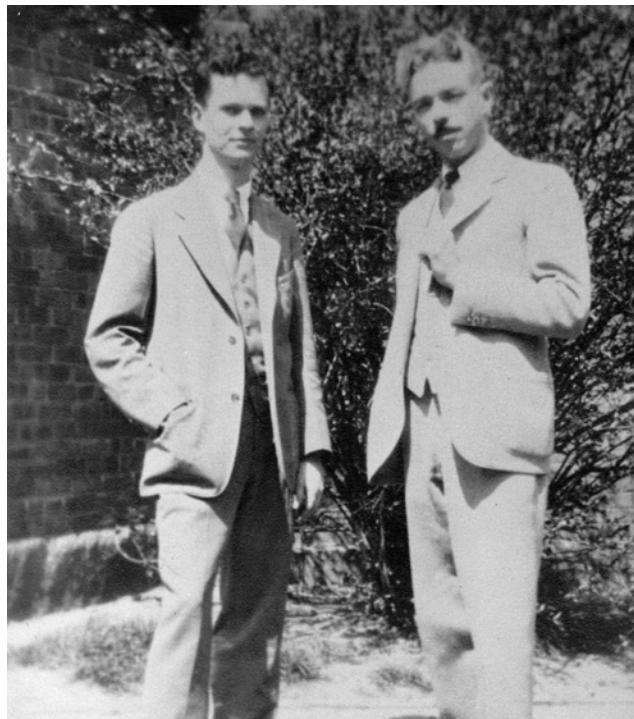
Portanto, de modo algum, a precoce aspiração de Skinner em formular uma nova ciência do comportamento foi

mera pretensão ou ingenuidade de um jovem estudante de doutorado. Basta dizer que as capacidades científicas e a segurança intelectual de Skinner foram rapidamente reconhecidas no ambiente de Harvard por ninguém menos que Boring, e também pelo chefe de departamento de fisiologia William C. Crozier. Esse último, responsável por convidar Skinner para migrar seu doutorado para aquele departamento.

Em oposição às impressões negativas sobre o departamento de psicologia, ao entrar em contato com o trabalho de Crozier e o ambiente acadêmico e institucional do departamento de fisiologia, Skinner expressou apreço imediato pela ciência ali praticada e pela constatação de privilégios ausentes no departamento de psicologia. Recorda, assim, que "a fisiologia do sistema

nervosa é praticamente psicologia e as facilidades do Departamento de Fisiologia são melhores".

Em termos gerais, associar-se ao laboratório de Crozier significou estudar o comportamento como um todo a partir da noção de reflexo e desfrutar de toda a liberdade científica e institucional oferecida por aquele pesquisador. Essa condição de trabalho foi concebida por Skinner como ideal, visto que poderia estudar o que queria, sem nenhum tipo de imposição ou controle. Consequência dessas condições foi que quanto mais Skinner se manteve distante do departamento de psicologia, e foi incentivado a se orientar por interesses individuais, mais seu esboço de uma ciência do comportamento se distanciou de regras canônicas da psicologia experimental e da própria fisiologia praticada em Harvard. O que incidiu na possibilidade, ainda no doutorado, de formular o projeto de uma inovadora



B. F. Skinner (left) and Fred S. Keller (1931)

possibility, even in his Ph.D., of formulating the design of an innovative science of behavior.

Because of his innovative research after his Ph.D. studies in 1931, Skinner obtained continued recognition of his scientific capabilities as well as more access to privileges reserved to Harvard's academic elite. His post-doctoral fellowship at the National Research Council Fellowship between 1932 and 1933 and especially his approval for the Harvard Society of Fellows between the years 1933 and 1936 is proof of the recognition he received. With these conditions, Skinner won more time, more funding, more space, and more scientific and institutional freedom to develop his research without suffering any kind of imposition or control over his research.

The meeting between Skinner and Keller and the spread of a new science of behavior

For Skinner, academic and institutional support did not exist for a behaviorist when he first entered Harvard. Except for his participation in courses and seminars taught by Hunter, the only behaviorist support found by Skinner happened through informal means: Keller invited Skinner to join a small group of students who debated questions of behaviorism at Harvard.

Skinner — a freshman — and Keller — a doctoral veteran in psychology at Harvard — met probably in a course on learning and motivation taught by Boring in the first half of Skinner's time at Harvard in 1928. It is when referring to this seminar that Keller mentions for the first time Skinner's name in his autobiography, mentioning a promising member for the small informal group of behaviorists students at Harvard. "I met a new addition to our group, with whom I quickly found a common cause. The student's name was Skinner; he had just returned from Paris; he had wanted to become a writer; and his reading of John Watson had been partly instrumental in leading him back to school. These things recommended him for me." The mutual appreciation for behaviorism and the lack of opportunities to discuss this approach at Harvard defined the appeal between Keller and Skinner. But unlike Keller, who already had the support from other students and had adapted to Harvard's Psychology Department, Skinner saw the opportunity to meet an adept student of behaviorism as a way to ease the sense of isolation that he was beginning to experience in his first months at the university.



Fred S. Keller and B. F. Skinner (1938)

ciência do comportamento.

Pela inovação de suas pesquisas, após o término do doutorado, em 1931, Skinner obtém contínuo reconhecimento das suas capacidades científicas, assim como mais acesso a privilégios reservados à elite acadêmica de Harvard. Provas disso foi o acesso à bolsa de pós-doutorado da *National Research Council Fellowship*, entre os anos de 1932 e 1933, e principalmente, sua aprovação para a *Harvard Society of Fellows*, entre os anos de 1933 e 1936. Com essas condições, Skinner obteve mais tempo, mais financiamento, mais espaço e mais liberdade científica e institucional para empreender suas pesquisas; ficando então, mais do nunca, sem sofrer qualquer tipo de imposição ou controle sobre suas pesquisas.

O encontro entre Skinner e Keller e a propagação de uma nova ciência do comportamento

Para Skinner, um suporte acadêmico e institucional behaviorista inexistia quando ingressou em Harvard. Salvo por sua participação em disciplinas e seminários lecionados por Hunter, o único apoio behaviorista encontrado por Skinner ocorreu por vias informais: por intermédio de Keller, que o convidou para participar de um pequeno grupo de alunos que debatiam, em Harvard, questões relacionadas ao behaviorismo.

Skinner — um calouro; Keller — um veterano do doutorado em psicologia de Harvard —, se conheceram, provavelmente em uma disciplina sobre aprendizagem e motivação, oferecida por Boring, no primeiro semestre de Skinner em Harvard, em 1928. É quando se refere a essa disciplina que Keller cita, pela primeira vez, o nome de Skinner em sua autobiografia, mencionando ter conhecido um promissor membro para o pequeno grupo informal de alunos behavioristas em Harvard. "Eu conheci um novo element para nosso grupo, com quem eu rapidamente encontrei uma causa em comum. O nome do estudante era Skinner; ele tinha acabado de voltar de Paris; ele queria se tornar um escritor; e sua leitura de John Watson foi parcialmente instrumental em conduzi-lo de volta a faculdade. Essas coisas o recomendaram para mim". O apreço mútuo pelo behaviorismo e a carência de oportunidades para debater essa abordagem em Harvard definiram a aproximação entre Keller e Skinner. Mas, diferente de Keller, que já contava com apoio de outros estudantes e estava adaptado ao departamento de psicologia de Harvard, para Skinner, conhecer um aluno adepto do behaviorismo foi garantia de suporte para amenizar o sentimento de isolamento que começava a experimentar em seus primeiros meses naquela instituição.

Although there is a clear identification of elements shared by Keller and Skinner that resulted in the approach of both, their academic careers denote more differences than similarities. However, these differences resulted in a harmonious relationship of complementarity, maintained over six decades between the founder of a science of behavior and its first follower and disseminator. Let's have a look: on the one hand, the young Skinner, with scant training in psychology, assuming an iconoclastic stance since his entry into the Ph.D. program, and with ambitious intentions of founding a science of behavior and who was recognized as a potential genius still in his early years at Harvard. On the other hand, Keller, a psychologist in training who at first, had no clear purpose in life, was insecure intellectually, and who was prone to be a scientific disciple. However, throughout his academic career, he acquired intellectual security and skills in the field of education and scientific communication, which enabled him to be an accomplished science disseminator.

This relationship of complementarity between Skinner and Keller acquires visibility especially at the end of the 1930s when Keller is believed to become the first Skinnerian after the publication of the Skinner's first book in 1938. What can be noted from that is Keller's unremitting effort, at first informal, to introduce the experimental analysis of behavior in different academic institutions to which he was linked throughout his academic career. It was his great merit to create one of the main disciplinary strategies of behavior analysis: the formulation, together with William N. Schoenfeld in 1947 at the University of Columbia, of the first psychology curriculum based exclusively on Skinner's scientific proposal. Curriculum that, according to Keller and Schoenfeld, had the purpose to guarantee the survival and dissemination of Skinnerian science since "the struggle for survival of scientific theories is fought in many arenas and the victory must be earned in all of them. And the classroom will not be forgotten in this dispute." Also, together with Schoenfeld, Keller was responsible for another disciplinary strategy of behavior analysis: writing the first textbook of psychology also based on the Skinner's scientific proposal. A book that was considered by Keller as "... a Skinner for Beginners." And last but not least, Keller also played a significant role in the international spread of the experimental analysis of behavior, being the central figure in the institutionalization of this science in different countries. The greatest example was his special participation in the establishment of the science in Brazil, which currently has the largest number of behavior analysts outside the United States.

A historical prototype of social relations in behavior analysis

The link between Skinner and Keller denotes the beginnings of the social organization of behavior analysis as an almost individual and informal enterprise, which in its first decades, acquired an increasingly collective and formal character. This was the origin of behavior analysis as a scientific community: a community that expanded

Embora haja uma clara identificação de elementos compartilhados por Keller e Skinner que implicaram na aproximação de ambos, suas trajetórias acadêmicas denotam mais diferenças do que semelhanças. Entretanto, o que este breve ensaio sugere é que essas diferenças compatibilizaram-se em uma harmoniosa relação de complementaridade, mantida ao longo de seis décadas, entre o fundador de uma ciência do comportamento e o seu primeiro adepto e divulgador. É assim que se observa: de um lado, o jovem Skinner, com parca formação em psicologia, assumindo uma postura iconoclasta desde seu ingresso no doutorado, com pretensões ambiciosas de fundar uma ciência do comportamento e reconhecido como um provável gênio, ainda nos seus primeiros anos em Harvard; e do outro lado, Keller, um psicólogo de formação, a princípio sem propósito claro de vida, quando de seu ingresso na universidade, inseguro intelectualmente e propenso a ser um discípulo científico –, e que ao longo de sua trajetória acadêmica adquiriu segurança intelectual e habilidades, no campo do ensino e comunicação científica, que o habilitaram a ser um exímio divulgador científico.

Essa relação de complementaridade, entre as trajetórias de Skinner e Keller, adquire visibilidade especialmente ao final da década de 1930, quando Keller se assume como o primeiro skinneriano, após a publicação do primeiro livro de Skinner, em 1938. O que se observa a partir de então, é o incessante esforço, a princípio informal, de Keller, em introduzir a análise experimental do comportamento nas diferentes instituições acadêmicas que esteve vinculado ao longo de toda sua carreira acadêmica. É seu grande mérito criar uma das principais estratégias de disciplinarização da análise do comportamento. A formulação, em conjunto com William N. Schoenfeld, em 1947, na universidade de Columbia, do primeiro currículo de psicologia fundamentado exclusivamente no projeto científico de Skinner (Keller & Schoenfeld, 1949). Currículo que, como Keller e Schoenfeld assumiram, teve o propósito de garantir a sobrevivência e disseminação da ciência skinneriana, posto que "a luta pela sobrevivência de teorias científicas é travada em muitas arenas e a vitória deve ser conquistada em todas. E a sala de aula não será esquecida nessa disputa". Igualmente, em conjunto com Schoenfeld, Keller foi responsável por outra estratégia disciplinar da análise do comportamento: a escrita do primeiro livro-texto de psicologia, também assentado na proposta científica de Skinner. Livro considerado por Keller como "...um Skinner para Iniciantes". E, por último, porém não menos importante, Keller teve também papel relevante na disseminação internacional da análise experimental do comportamento, sendo figura central na institucionalização dessa ciência em diferentes países. Exemplo maior é sua participação especial na instauração da área no Brasil, país que atualmente concentra o maior número de analistas do comportamento, fora dos Estados Unidos.

Um protótipo histórico das relações sociais na análise do comportamento

O vínculo entre Skinner e Keller denota os primórdios da organização social da análise do comportamento como um empreendimento quase individual e informal, que adquire em suas primeiras décadas um caráter cada vez mais coletivo e formal. Foi assim, portanto, o embrião da análise do comportamen-

from the first group of practitioners of Skinnerian science to several institutionalization strategies, disciplinarization of that field of knowledge, the foundation of JEAB, the creation of APA's division 25 of the experimental analysis of behavior, and the constitution of the first scientific societies in the area.

Finally, this reflection, although brief and introductory, intends to be a historiographical example of the value of including biographical and micro-historical elements in addition to fulfilling a curiosity about the founding of the science. The illustration of the relationship between Skinner and Keller shows how those elements would be essential to a broad understanding of the history of behavior analysis and the careers of its practitioners. 🦋

Translation by Monalisa Leão

to como comunidade científica, posto que ampliou-se para o primeiro grupo de praticantes da ciência skinneriana resultando em diversas estratégias de institucionalização e disciplinarização daquele campo do conhecimento, como fundação do JEAB – a criação da divisão 25 de análise experimental do comportamento da APA e da constituição das primeiras sociedades científicas da área.

Por último, o presente ensaio, ainda que breve e introdutório, pretendeu ser uma amostra historiográfica do valor da inclusão de elementos biográficos e micro-históricos para além de seus usos como curiosidade ou mera história dos bastidores da ciência. A ilustração da relação entre Skinner e Keller evidencia como aqueles elementos seriam essenciais para uma compreensão ampla da história da análise do comportamento e da trajetória de seus praticantes. 🦋

About the Author:

Robson Nascimento da Cruz is a Doctor of Psychology from the Federal University of Minas Gerais (UFMG), Brazil. He is currently postdoctoral student at the Pontifical Catholic University of São Paulo (PUC-SP) with scholarship by The São Paulo Research Foundation (FAPESP). He has experience with historical and conceptual research in psychology with emphasis on the following subjects: psychosocial organization of science, uses of the biographical and autobiographical account in psychology, and social historiography of psychology. His reflection is derived from his thesis entitled B. F. Skinner and the Scientific Life and his work in postdoctoral studies. Recently, Robson visited the collection of Skinnerian unpublished documents at Harvard University to complement his research on the life and work of Skinner. His research has been referenced in behavior analysis and has contributed greatly to the understanding of historical and social aspects that influenced Skinnerian science and the development of the area.

Robson nascimento da Cruz é doutor em Psicologia pela Universidade Federal de Minas Gerais (UFMG), Brasil. É atualmente estudante de pós-doutorado na Pontifícia Universidade Católica de São Paulo (PUC-SP), com bolsa da Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP). Ele tem experiência com pesquisas histórico-conceituais em Psicologia, com ênfase nos seguintes temas: organização psicossocial da ciência, usos do relato biográfico e autobiográfico na psicologia e historiografia social da psicologia. Sua reflexão é derivada da sua tese intitulada “B. F. Skinner e a vida científica” e de seu trabalho no pós-doutorado. Recentemente, Robson visitou o acervo de documentos não publicados de Skinner na Universidade de Harvard para complementar sua pesquisa sobre a vida e obra desse autor. Sua pesquisa tem sido referência na Análise do Comportamento no Brasil e tem contribuído fortemente para a compreensão dos aspectos históricos e sociais que influenciaram a proposta skinneriana de uma ciência do comportamento e do próprio desenvolvimento da área.



Robson Nascimento da Cruz, Ph.D.



reflections

To Advance Science, We Need to Study Its History

Gabriel Vieira Cândido, Ph.D.

Interview and English translation by Bruna Colombo dos Santos

Let's talk about the history of behavior analysis in Brazil: How did it start, what factors contributed to the development of the discipline, and what was the role of Fred S. Keller?

It has been a consensus in the field to recognize the arrival of Professor Keller in 1961 as the starting point of behavior analysis in Brazil. Although some reports suggest that texts of *Behavior of Organisms* and *A Case History in a Scientific Method* by B. F. Skinner and *The Definition of Psychology* by Keller were already known by a few in academia, it was, no doubt, only with the arrival of Keller that the first group of researchers and professors interested in reinforcement theory began to form.

It is important to understand that at the time, while still not being a regulated profession, psychology started to first appear in undergraduate courses in Brazil. At the University of São Paulo (USP), where Keller was invited, the course was started in 1958. The invitation for Keller to come to Brazil is inserted in the context of future conflicts on what place psychology would have. Keller's invitation, for example, was co-sponsored by the physiology department.

During 1961, in a course titled *Comparative and Animal Psychology*, Keller introduced reinforcement theory, guided the construction of operant conditioning chambers as part of the first laboratory of experimental analysis of behavior, and introduced programmed instruction. At the end of the year, he returned to his activities in the United States but invited Gil Sherman to take over his responsibilities in Brazil in 1962.



Dr. Gabriel Vieira Cândido has an M.A. in experimental psychology and behavior analysis from Pontifical Catholic University, and Ph.D. in psychology from Sao Paulo University (Ribeirão Preto campus). Currently, he researches history and philosophy of behavior analysis in Brazil in the Laboratory for Historical Research in Behavior Analysis (LeHac-PUC/SP).

Gabriel Vieira Cândido, Psicólogo, Mestre em Psicologia Experimental: Análise do Comportamento pela Pontifícia Universidade Católica de São Paulo, e Doutor em Psicologia pela Universidade São Paulo (campus Ribeirão Preto). Ele integra o Laboratório de Estudos Históricos em Análise do Comportamento (LeHac – PUC/SP) onde ele vem pesquisando sobre História e Filosofia da Psicologia e Análise do Comportamento no Brasil.

Vamos falar sobre história da análise do comportamento no Brasil: Como começou, quais fatores contribuíram para o desenvolvimento da disciplina, e qual foi o papel de Fred S. Keller?

Tem sido um consenso na área reconhecer a vinda do professor Keller, em 1961, como a origem da Análise do comportamento no Brasil. Apesar de alguns relatos apontarem que textos como “Behavior of Organisms” e “A Case history in a scientific method”, de Skinner e “The Definition of Psychology”, de Keller já eram conhecidos por alguns poucos no meio acadêmico, foi, sem dúvida alguma, apenas com a chegada de Keller que o primeiro grupo de pesquisadores e professores interessados pela teoria do reforço começou a se formar.

Vale considerar que na época, a Psicologia no Brasil não era uma profissão regulamentada, mas começavam a surgir os primeiros cursos de graduação na área. Na Universidade de São Paulo, para onde Keller foi convidado, o curso havia começado em 1958. O convite feito a Keller para vir ao Brasil se insere, então, em um contexto de conflitos pelo lugar que a psicologia teria. O convite feito a Keller foi, por exemplo, realizado pelo departamento de fisiologia.

Durante todo o ano de 1961, em um curso sobre Psicologia Comparada e Animal, introduziu a “teoria do reforço”, orientou a construção de uma caixa de

condicionamento operante, para compor um primeiro laboratório de análise experimental do comportamento e introduziu a instrução programada no país. Ao fim do ano, ele voltou para suas atividades nos Estados Unidos, mas convidou Gil Sher-

Among those attending Keller's course were some students of the first psychology class at USP plus two professors: Rodolpho Azzi, philosopher and Professor of Philosophy at Philosophy, Sciences, and Lyrics College of São Jose do Rio Preto and Carolina Bori, pedagogue and Assistant Professor at USP and Cathedratric of Psychology from Philosophy, Sciences, and Lyrics College of Rio Claro.

Together, Azzi and Bori worked on the translation of *Principles of Psychology* by Keller and Shoenfeld and *The Analysis of Behavior* by Holland and Skinner. Both books were used by them in 1962 as course material and in conducting of laboratory exercises in Rio Claro. Following in Keller's and Sherman's footsteps, they realized the Personalized System of Instruction and applied PSI in their courses, *Introduction in Experimental Analysis of Behavior I and II* at the Psychology Department of Brasilia University (UnB) in 1964. There was a group of professors, supervisors, and master's degree students that, together, contributed to the production of course materials. There, *Science and Human Behavior* by Skinner was translated by Rodolpho Azzi and João Claudio Todorov.

The same year, as the military came to power in Brazil, 13 professors were fired and arrested, accused of being communists. More than 200 professors (about 90 percent of faculty members of the Brasilia University) quit in support of their jailed colleagues. This moment became known as the birth of the diaspora of behavior analysts when professors of Psychology Department of UnB went to different Brazilian universities and continued developing what they were doing. This contributed to a fast diffusion of experimental analysis of behavior and PSI in Brazil.

Your research is focused on Dr. Carolina Bori, one of the most important contributors to the rise of the behavior analysis in our country. Please tell us more about her role in the development of this field in Brazil.

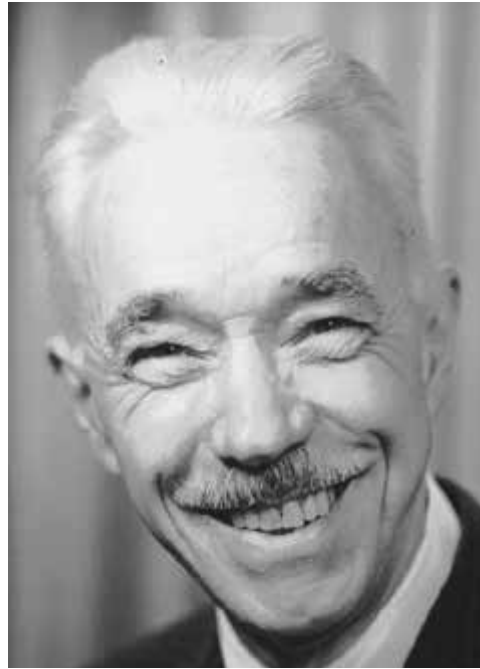
man para assumir suas aulas no Brasil em 1962.

Entre os brasileiros presentes no curso estavam alguns alunos da primeira turma do curso de Psicologia da USP e mais dois professores: Rodolpho Azzi, filósofo e professor de Filosofia na Faculdade de Filosofia, Ciências e Letras de São José de Rio Preto e Carolina Bori, Pedagoga e então professora assistente na USP e catedrática de Psicologia da Faculdade de Filosofia, Ciências e Letras de Rio Claro.

Juntos, Azzi e Bori trabalharam na tradução de livros como "Principles of Psychology", de Keller e Schoenfeld e "The Analysis of Behavior", de Holland e Skinner, que já foram usados por eles em 1962, na disciplina e na condução de exercícios de laboratório, em Rio Claro. Com Keller e Sherman, idealizaram o *Personalized System of Instruction* (PSI) para aplicar nas disciplinas "Introdução em Análise Experimental do Comportamento I" e "Introdução em Análise Experimental do Comportamento II" do Departamento de Psicologia da Universidade de Brasília (UnB), em 1964. Contavam com um grupo de professores, monitores e mestrandos que, juntos, contribuíram para produção

de materiais didáticos e traduziram livros como o "Science and Human Behavior", de Skinner (traduzido por Rodolpho Azzi e João Claudio Todorov).

Entretanto, neste mesmo ano, a política brasileira foi tomada por militares que cassaram cerca de 13 professores acusados de serem comunistas e, com isso, mais de 200 professores (cerca de 90% do corpo docente da universidade) se demitiram em apoio aos professores que haviam sido presos. Este momento ficou conhecido como a Diáspora da análise do comportamento, quando aqueles professores do Departamento de Psicologia da UnB foram para diferentes universidades brasileiras e continuaram desenvolvendo aquilo que estavam fazendo. Isto contribuiu para uma rápida difusão da Análise Experimental do Comportamento e do PSI



Fred S. Keller



Carolina M. Bori

Sua pesquisa tem ênfase na Dr. Carolina Bori, uma das pessoas que mais contribuiu para o surgimento da análise do

My research on Carolina Martuscelli Bori (1924-2004) started in 2010. The contribution of Dr. Bori to behavior analysis in Brazil in the 1960s is well-known, but with this research, I explored her influence on the development of scientific culture in general. For me, it was looking at the history of science in Brazil as told through the biography of an important character of behavior analysis in the country. Her intense political activism since the beginning of her career contributed, among other things, to the regulation and formation of the profession of psychologist and to the opening of psychology courses and experimental psychology laboratories. Even during the repression of military dictatorship, she was part of a research group that campaigned for the freedom of scientists and for improvements of the conditions for scientific work. This struggle was one of the principal contributions left by her, but beyond that, the research on Carolina Bori allows the identification of theoretical questions defended by her, institutional problems that impacted her career, and, mainly, the Brazilian research tradition in psychology that was impacted by actions of this scientist.

Before Fred S. Keller's arrival, Carolina Bori was an Assistant Professor in Philosophy at USP, where she was responsible for experimental psychology. She was also responsible for the psychology course taught to the students of pedagogy in a town named Rio Claro. She had concluded her master's degree at the New School for Social Research in the United States. She worked as a Gestalt psychologist, mainly with Kurt Lewin's theory, and in her classes, guided her students in replications of classical studies, such as Köhler's one on insight learning.

Throughout the 1950s, Annita Cabral was the head of Psychology Chair at USP, where Carolina Bori had taught experimental psychology. Because of this professional relationship, Bori engaged herself in the regulation of the psychology profession in Brazil, which was then lacking in the country, and in the opening of the undergraduate course in

comportamento no nosso país. Por favor, conte-nos mais sobre o papel dela para o desenvolvimento da área no Brasil.

Minha pesquisa sobre Carolina Martuscelli Bori (1924-2004) começou em 2010. Já era bastante conhecida a contribuição de Carolina M. Bori para a análise do comportamento no Brasil, principalmente para o início da área na década de 1960, mas com esta pesquisa, pude explorar a contribuição desta pesquisadora para o desenvolvimento de uma cultura científica no país. Particularmente, prefiro ver a minha pesquisa como História da Ciência no Brasil, contada a partir da biografia de um importante personagem da análise do comportamento no país.



Carolina Bori. 1947

Sua intensa atuação política desde o início de sua carreira contribuiu, entre outras coisas, para a regulamentação da profissão e formação do psicólogo, abertura de cursos de Psicologia e laboratórios de Psicologia Experimental, e, mesmo durante a repressão da ditadura militar, ela fez parte de um grupo de pesquisadores que lutou pela liberdade do cientista e pela melhoria das condições para o fazer científico. Esta luta foi uma das principais contribuições deixadas por ela, mas além disso, a pesquisa sobre Carolina Bori vem permitindo identificar questões teóricas defendidas por ela, problemas institucionais que impactaram sua carreira, e, principalmente, uma tradição de pesquisa em psicologia no Brasil que tem uma identificação na atuação desta cientista.

Antes da chegada de Keller, Carolina Bori era professora assistente no curso de Filosofia da USP,

onde era responsável pela Psicologia Experimental. Era também a responsável pela Psicologia ensinada aos alunos do curso de Pedagogia, na cidade de Rio Claro. Havia concluído seu mestrado na *New School for Social Research*, nos Estados Unidos. Trabalhava com Psicologia da Gestalt, principalmente a Teoria de Kurt Lewin e, em suas aulas, conduzia seus alunos em replicações de pesquisas clássicas, como os estudos sobre insight de Köhler.

Durante a década de 1950, Annita Cabral era a chefe da cadeira de Psicologia onde Carolina Bori ensinava Psicologia Experimental. Por causa desta relação profissional, Bori se em-

psychology at USP. At that moment, she started her struggle for psychology as a science.

When Keller arrived, Carolina Bori already was a professional with recognized scientific background. But after attending Keller's classes, she included the experimental analysis of behavior in her undergraduate course in experimental psychology (from 1962) and in her graduate course (at the end of 1960s). With that, she formed the first generation of researchers in behavior analysis and contributed to the introduction of experimental analysis of behavior to the undergraduate courses in psychology in the country; and through her work with PSI, she became an authority in Brazil and in other countries of Latin America.

Beyond her academic activities, she assumed positions that allowed her to discuss the direction of the scientific development in the country, and with that, she created conditions for advancement not only of behavior analysis but any initiative that promoted the science. Some examples of these conditions are the rise of public investment in research, the creation of a Science and Technology Ministry, and the coordination of an institute that used to build laboratory equipment (including the Skinner Box) for the popularization of science.

Another aspect of your research in the history of behavior analysis in Brazil is the study of research groups. Tell us more about that.

My interest in behavior analysis started in 2002 as I was working on my degree in psychology, supervised by Professor João Carlos Muniz Martinelli at University Vale do Rio Doce. There, I conducted my first study on how researchers in behavior analysis in Brazil were organizing themselves in research groups, according to the proposal of National Board of Scientific and Technological Development (CNPq). CNPq's directory is part of a Brazilian scientific project that identifies who the scientists are, where they are, and what are they researching. That applies to all the researchers registered in Brazilian universities. But my interest in the history of behavior analysis truly developed after my contact with Professor Maria do Carmo Guedes during my master's degree at Pontifical Catholic University of Sao Paulo (PUC-SP). Under her guidance, I continued analyzing the data of CNPq directory. The goal of the study on research groups was to learn how behavior analysts can be recognized from the directory of CNPq. All the researchers in Brazil are registered with this platform with it listing their respective interest areas, research lines, and groups of which they are part. So, it was possible to identify the behavior analysts doing research in universities, the research

penhou na regulamentação da profissão de psicologia no Brasil e na abertura do curso de graduação em psicologia da USP, ainda inexistente no país. Neste momento, Bori então iniciava sua luta em prol da psicologia como ciência.

No momento da chegada de Keller, Carolina Bori já era uma profissional com reconhecida contribuição científica. Mas ao entrar em contato com o conteúdo das aulas de Keller, ela incluiu a análise experimental do comportamento em suas aulas de Psicologia Experimental na graduação (a partir de 1962) e na pós graduação (no final da década de 1960). Com isso, formou uma primeira geração de pesquisadores em análise do comportamento, contribuiu na introdução da análise experimental do comportamento nos cursos de graduação em psicologia no país e, pelo seu trabalho com o PSI, se tornou uma referência no Brasil e em outros países da América Latina.

Mas além das atividades acadêmicas, ela assumiu cargos que permitiram a ela discutir os rumos do desenvolvimento científico no país e, com isso, foi criando condições para o avanço, não apenas da análise do comportamento, mas de qualquer iniciativa que promovesse o avanço científico. Alguns exemplos desta criação de condições: aumento do investimento público em pesquisa, criação de um Ministério de Ciência e Tecnologia e coordenação de um instituto que construía equipamentos de laboratório (incluindo caixas de Skinner) para a popularização das ciências.

Outro aspecto da sua pesquisa em história da análise do comportamento no Brasil é o estudo de grupos de pesquisa. Conte-nos mais sobre isso.

Meu interesse pela Análise do comportamento se deu durante a graduação em Psicologia, em 2002, sob a supervisão do Professor João Carlos Muniz Martinelli, na Universidade Vale do Rio Doce. Lá fiz meu primeiro estudo sobre como pesquisadores em análise do comportamento no Brasil vinham se organizando em Grupos de Pesquisa, conforme proposta do Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq). Este Diretório é parte de um projeto científico brasileiro que permite identificar quem são, onde estão e o que estão pesquisando todos os pesquisadores cadastrados nas universidades brasileiras. Mas meu interesse pela História da Psicologia e da Análise do Comportamento se deu, de fato, após meu contato com a professora Maria do Carmo Guedes, durante meu curso de mestrado na Pontifícia Universidade Católica de São Paulo (PUC-SP). Sob a orientação dela, continuei analisando os dados do Diretório do CNPq. A pesquisa foi feita com o objetivo de conhecer como os analistas do comportamento podem ser reconhecidos a partir do Diretório do CNPq. Todos os pesquisadores do Brasil são cadastrados nesta plataforma, com o registro das respectivas áreas de interesse, linhas de pesquisa e grupos dos quais fazem parte.

themes that they developed, and the possible work partnerships developed between the years of 2002 and 2008. It was a study of the recent history of the field's organization in which I could compare CNPq data with other opportunities to identify researchers grouping as scientific societies.

At the same time, I got involved with other activities, including the creation of the Historical Studies Laboratory in Behavior Analysis and a Center of Documentation on the History of Behavior Analysis in Brazil. These organizations, besides enabling access to documents for historical research, organized expositions on the history of the field in Brazil (at ABPMC meetings, at Campinas in 2008 and at Latino American Association of Behavior Modification at Jundiaí in 2010). All these activities led me to deepen my studies in the history of psychology during my Ph.D. under the guidance of Professor Marina Massimi.

How do you evaluate the scientific value of the history of behavior analysis?

The history of behavior analysis, as an area of knowledge production, is developing itself in an impressive way. There is a strong interest in learning the history of the field in different countries, the contribution of researchers, the history of laboratories, the history of the applied behavior analysis, the history of scientific associations, and the history of concepts, among others. There is some research that evaluates the historiographical production in behavior analysis. According to Fernando Polanco, one of the main characteristics is the concern with internal advances of the field. This contributes to the deepening of conceptual principles and indicates temporal order and origin of events and theories.

It is important to say that in historical research, a political, social, and economic context or any other cultural aspect can relate to scientific events. I believe that this conjunct of research themes (internal and external to behavior analysis) can contribute to the formation of new professionals, who are more critical when regarding the problems that are presented to them. Further, the production of a new history that relates the field with cultural context can bring new advances and can point to new research.

In your opinion, what can the history of behavior analysis in Brazil, or in other countries, contribute to the development of the discipline itself?

The history of science looks mainly on how the advance of an area happened as an interaction with other events. A determinate event of science history can only be comprehended if derived from the very context in which it emerged. Such perspective tends to set apart a truly scientific

Assim, foi possível identificar os analistas do comportamento que estão realizando pesquisas em universidades, os temas das pesquisa que desenvolvem e possíveis parcerias de trabalho desenvolvidos entre os anos de 2002 e 2008. Foi uma pesquisa sobre a história recente de organização da área em que pude comparar com outras oportunidades de agrupamento de pesquisadores, como as sociedades científicas.

Ao mesmo tempo, como monitor de uma disciplina de Pesquisa Histórica, me envolvi com outras atividades, incluindo a criação do Laboratório de Estudos Históricos em Análise do Comportamento, um centro de documentação sobre a História da análise do comportamento no Brasil que, além de possibilitar o acesso a documentos para pesquisa histórica, organizou exposições sobre a história da área no Brasil (nos encontros da ABPCM, em Campinas no ano de 2008 e da Associação Latinoamericana de Modificação do Comportamento, em Jundiaí, no ano de 2010). Todas estas atividades me levaram a aprofundar meus estudos em História da Psicologia durante o doutorado, sob orientação da professora Marina Massimi.

Como você avalia a produção científica sobre História em Análise do comportamento?

A História da Análise do comportamento, como uma área de produção de conhecimento, vem se desenvolvendo de maneira impressionante. Existe uma grande preocupação em conhecer a história da área em diferentes países, a contribuição de pesquisadores, a história de laboratórios, a história da análise aplicada do comportamento, a história de associações científicas, a história de conceitos, entre outras. Existem algumas pesquisas que avaliaram a produção historiográfica em Análise do comportamento. De acordo com um artigo de Fernando Polanco, uma das principais características é a preocupação com avanços internos da área. Esta característica contribui para aprofundar princípios conceituais, indicam ordem temporal, o local e a origem de acontecimentos e teorias.

É importante dizer que em pesquisa histórica um mesmo contexto político, social, econômico ou qualquer outro aspecto cultural pode apresentar relações com eventos da ciência. Acredito que este conjunto de temas de pesquisas (internos e externos à análise do comportamento) podem contribuir com a formação de novos profissionais mais críticos em relação aos problemas que lhes são apresentados. Mais ainda, que a produção de uma história que busque relacionar a área com outros contextos culturais pode trazer novos avanços e apontar novos problemas de pesquisa.

Como você avalia que a História da Análise do comportamento, no Brasil ou em outros países, pode contribuir com o desenvolvimento da disciplina?

A História da Ciência busca, principalmente, conhecer

ic historical work from a simple narration and reference of events. I believe that the history of behavior analysis, as an area that produces knowledge about historical variables, falls within this context.

If behavior analysis assumes behavior as a key concept, the history of the field should contribute to the understanding of the variables that affect the interactions of scientists. According to the current trends in the history of science, as well as the research data of analysis of behavior itself, these variables are the context into which a scientist falls.

For the analysis of behavior, history has a key role as part of the explanation of behavior in past interactions. Science as a cultural practice can be looked at as the story of interaction established by scientists who gained prominence.

Therefore, I believe that the history of behavior analysis can contribute to the development of the discipline by drawing attention to possible cultural variables that have determined certain practices of the field over time. What will be done with this knowledge is a subject that history could address. But surely, this knowledge is necessary when you want to plan new and better conditions for the development of the area as well as establishment of closer relations with other theoretical perspectives or areas of knowledge that are deemed important. 🦋



Interview and English translation by Bruna Colombo dos Santos. Bruna is a Ph.D. candidate in the Program of Theory and Research of Behavior (PPGTPC) at the Federal University of Para, Brazil, where she is studying the concept of punishment in the works of B. F. Skinner.

como se deu o avanço de uma área a partir de sua interação com outros eventos. Assim, um determinado evento da história da ciência só seria bem compreendido se entendido a partir do próprio contexto em que surge. Tal perspectiva tende a afastar o historiador da ciência de uma perspectiva unicamente internalista, que busca narrar a ordem dos acontecimentos a partir da visão do presente ou de uma perspectiva celebrativa. Acredito que a História da Análise do comportamento, enquanto área que produz conhecimento sobre variáveis históricas, se insere neste contexto.

Se a Análise do comportamento assume o comportamento como um conceito chave, a história da área deve contribuir para a compreensão das variáveis que afetam as interações que um cientista estabelece. De acordo com as correntes atuais da História da Ciência, assim como os dados de pesquisa da própria análise do comportamento, estas variáveis estão no contexto em que o cientista se insere.

Para a análise do comportamento, a história tem um papel fundamental, já que parte da explicação do comportamento está em interações passadas. Ao assumir a ciência como prática cultural, é a história de interação estabelecida por cientistas que ganha destaque.

Sendo assim, acredito que a História da análise do comportamento pode contribuir com o desenvolvimento da disciplina ao chamar atenção para possíveis variáveis culturais que vem determinando certas práticas da área ao longo do tempo. O que será feito com este conhecimento é um assunto que a História poderá abordar, mas com certeza este conhecimento é necessário quando se pretende planejar novas e melhores condições para o desenvolvimento da área, assim como um estreitamento de relações com outras perspectivas teóricas ou áreas do conhecimento que se julgue importante. 🦋



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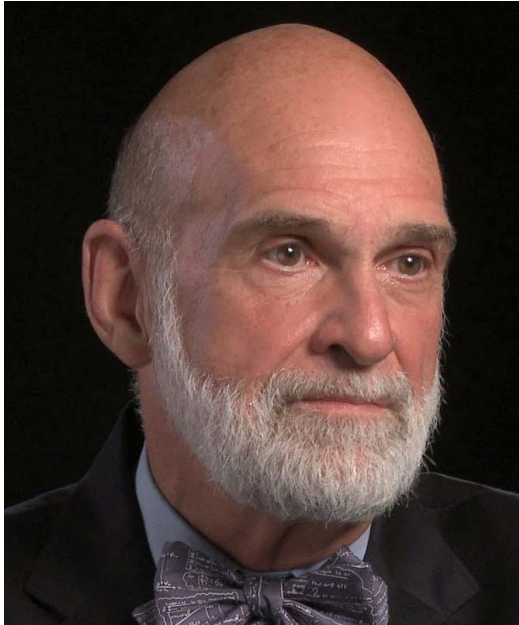
A Call for Volunteers

As we transition to six editions per year in 2016, we are looking to expand the list of energetic volunteer correspondents and translators worldwide to help produce appealing and behaviorally-oriented articles for *Operants*. If conducting an interview, reviewing a book, reporting the news, and translating articles is something you or your friends and colleagues would like to participate in, please contact Sheila Habarad at s.habarad@bfskinner.org. We continue to add new languages and representatives from new countries. Even if your country or favorite topic was recently reported on, we can still use your help! Or maybe you feel that *Operants'* readers will benefit from the coverage of a specific subject or a profile of an individual — let us know! 🦋

Remembering Fred Keller

R. Douglas Greer, Ph.D.

**Teachers College and Graduate School of Arts and Sciences
Columbia University, New York**



R. Douglas Greer is Professor of Education and Psychology and Coordinator of the Programs in Behavior Analysis at Columbia University, Teachers College and the Graduate School of Arts and Sciences, where he has taught for 46 years. He is the author of over 200 research reports (70 on verbal behavior analysis) and conceptual publications in 25 different journals, and 12 books, and he has sponsored over 200 doctoral dissertations. Greer is a Fellow of the Association for Behavior Analysis and is the recipient of the American Psychology Association's Fred S. Keller Award for Distinguished Contributions to Education and The Association for Behavior Analysis award for Distinguished Contributions to the International Dissemination of Behavior Analysis. He has assisted in the development of Comprehensive Application of Behavior Analysis to Schooling (CABAS®) School in the U.S., Ireland, England, and Italy. His research interests have included verbal behavior analysis, the development of verbal behavior, a learner-driven science of teaching and the organizational behavior analytic procedures to support that system, pediatric behavioral medicine, a behavioral psychology of music, and the induction of and applications of observational learning.

How I got to know Fred Keller

On one of my visits with Fred Skinner (or “Burrhus” as Fred Keller referred to his friend B. F. Skinner), I asked him to consider writing a preface to a book I was finishing on operant conditioning and music. Skinner said that he would be glad to do so, but since the book contained a substantial reference to research and applications of Personalized System of Instruction (PSI), Skinner said that he thought that a preface by Fred Keller would be perfect. I told him that I did not know Fred Keller although I had read and obviously built some of my research and teaching applications by drawing extensively on the work in PSI. Skinner said he would provide an introduction. I then wrote to Fred Keller and sent him a copy of the manuscript. Subsequently, I talked with him on the phone, and he agreed to write the preface. It was a very kind preface—his preface was better written than the book.

I corresponded with him on a few occasions and then actually met him in person at the first “national” ABA meeting that I attended in Dearborn, Michigan in 1979.

How I got to know Fred better.

At this conference in 1979, I talked at length with Fred K. (along with a few other luminaries that I met for the first time including “Izzy” Goldiamond and his wife, Jack Michael, Julie Vargas, Bill Verplanck, Bob Wahler, Don Baer, Joe Spradlin, Vance Hall, and many others). At subsequent ABA meetings, I brought my students, and Fred often served as a discussant for symposia in which we presented research on PSI, part of the system that became Comprehensive Application of Behavior Analysis to Schooling (CABAS®), and our early work on verbal behavior.

I also got to know Frances Keller — the other half of the Keller team. We discovered that she had grown up on the same street in Utica as my then mother-in-law. We also had a summer home not far from Utica and had lots to discuss about the area. Her childhood home was only a few miles from Hamilton College, where Fred Skinner had been an undergraduate. When Fred K. courted Frances, he would drive up to Utica from Colgate College, where he was a professor. At this point, Frances would always point out that, “I was, of course, much younger than Fred.” Fred always smiled mischievously at this point. Fred and Frances were a handsome couple — and a real couple!

At the national ABA meetings in the 1980’s, my students and I had parties in my room, long before we were big enough to hold a reunion of Columbia students and CABAS professionals, and Fred, Frances, and Burrhus, along with folks like Joe Spradlin, U. T. Place, Ernie Vargas, and Carl Cheney, were often in attendance. It was an incredible opportunity for my students and myself. Fred K. charmed everyone and often disguised very important points with autoclitics in ways that only Fred could do.

How I received important correction learn units from Fred

Fred was a critical source of reinforcement for my work at a time when the only behavioral colleagues I had were Fred Keller and B. F. Skinner! But Fred Keller knew the importance of corrections — without

them, there is no contrast effect. Here are a few examples.

“You know, Doug, your students confuse criteria and criterion — you ought to work on that.”

“Doug, sometimes you are just too nice to your students.” This comment was particularly puzzling coming from a man who in his mid-nineties tried to attend every presentation that his former students made at ABA! Later, I discovered that he had been at a party with one of my former students in which there was apparently some gossip about me.

How Fred taught me from indirect contact with contingencies of reinforcement and punishment.

Fred attended his former students’ presentations and supported them. His students were simply part of his and Frances’ enlarged family. He taught until the student learned. He applied the principles of behavior to his teaching and his life, and he built a community of behavior analysts — gently but contingently. One of the reasons that Fred didn’t write more was that he was too busy supporting the work of his students and colleagues — not to mention the work of B. F. Skinner. Given the choice of doing or promoting his own work or assisting students, he assisted and promoted his students including many from Brazil after he had established a cadre of behavior analysts from Columbia University.

Fred Keller was a tough thinker!

Fred managed to be loved by many people, but I don’t think he set out to have everyone to like him. He was his own person. He didn’t tolerate sloppy science. While he reinforced precision, he did not countenance sloppiness of any form. While he was a tough scientist on all of us, he was tougher on himself than others. He was most critical of himself. He often commented on what a poor student he had been and his lack of productivity. He missed the fact that his productivity was channeled into others. He was genuinely humble about his contributions.

Fred could write. Read *Pedagogues Progress*. This is not only a good book; it is real literature. Read the chapter on his dream of being criticized by other faculty at Columbia for giving so many high grades in the courses he taught using PSI. It is also an example of the high standards he held for himself. His autobiography, *At My Own Pace*, is not only a description of the background of the growth of behavior analysis, it is one of the most interesting and well-written autobiographical accounts that I have read. Read it, and you will know Fred.

While Fred always came off publicly as a much warmer personality than Fred Skinner, Keller was less likely to make reinforcement errors in relationships. Skinner, to my way of thinking, was more likely to miss the personal weaknesses of others or more likely, tolerate them. Fred Keller was quite good at spotting those who were likely to be self-serving. On several occasions, he warned me of the motives of others — and he was right!

Fred was tough on himself personally too. Once Fred brought up that he had not been fair to his first wife and was quite upset about it. Frances quickly responded,

“Oh Fred, you are being hard on yourself again!” Frances kept the boat on course.

Fred and I both like eating fat!

Fred, Frances, some of my students, and I were eating at a restaurant once. I think he and I were both eating prime rib. I commented on the fact that I really liked fat. Frances then recalled a story about the time that Fred and she had attended dinner at a student’s house and a ham had been served. Frances recalled how Fred had embarrassed her by asking for the fat! After which, Fred and I asked for everyone’s fat! I think they gave it to us — the fat I mean.

A visit and astounding feats.

Once, Fred and Frances spent a few days with me at my Columbia University faculty apartment. The apartment that I live in is two-doors away from where Frances and Fred lived with John and Anne (their children) in the early years that Fred taught at Columbia. In fact, two of my neighbors were childhood friends of Fred’s and Frances’s children.

One evening, Fred and Frances and I went out to dinner, and on our return, we walked by the apartment house where Fred and Frances had lived. Fred wanted to go in the apartment house and visit their old apartment. I think Fred was about 95 then. There were about 16 steps leading up to the door, and I looked at the steps with some concern about navigating them. Before I could comment, Fred ran up the steps and asked us to hurry along! Neither Fred nor Frances thought anything about his feat.

When we arrived at the apartment that was several stories above the ground floor, Frances told us of the time she and Fred had returned from an engagement and they discovered that they were locked out. I think the children were locked in also but am not sure about this part of the story. Frances described how Fred had climbed out on the ledge of the airshaft several stories above ground level, entered one of the windows, and opened the door. Frances was amazed at the feat even in memory!

How Fred taught me that one should not be prejudiced about age.

On one occasion, I thought that Fred might need a hand and started to offer my arm. He quickly straightened me out with a blazing glance! He was the original gray panther! Now I understand this, all too well, as when people see me running at my advanced age and look at me askance as if that is something us old folks shouldn’t do. This was a man who went to Brazil, learned Portuguese, and made an entire nation of behavioral psychologists after he had retired from Columbia University. At the international conference of the Association for Behavior Analysis and the Brazilian Association for Psychology and Therapy in Brazil a few years ago, I saw a map of Brazil showing the spread of behavior analysis in Brazil. Amazing! In the words of Jack Gewirtz and Don Baer, “Age is an empty variable.” That statement doesn’t just apply to the development of children.

Fred visits the Fred S. Keller School

When I first began The Fred S. Keller School with

one of my current students (Nan McCorkle) and a former student, colleague, and wife (Laura Dorow) I asked Fred if I could name the school after him. I first got the idea to name the school after him when I heard him present a book for children that he wrote about a little opossum that went to a school for happy learners. Of course, it was a learner-driven behavioral school based on positive reinforcement, a school in which each student proceeded at his or her own pace and the school, rather than the student, was held accountable for learning. When I described that the school that we developed was to be thoroughly behavioral and was to be a place for happy learners, he agreed to have the school named after him. Several years after the school was well in to being a full blown behavioral system of instruction, we invited Fred to visit the school. Janet Twyman, who was then the senior-most behavior analyst at the school, arranged for Fred and Frances to be flown first class from North Carolina, and Fred and Frances stayed with me. Fred visited the school, and I think was pleased.

I bought a couple of "save the children" ties for the occasion that were a bit on the loud side. Fred thought that the tie was a bit too loud, but

Frances convinced him to wear the tie. One of my favorite pictures is of Fred and me wearing the ties standing side by side. But I am always reminded when I look at the picture that he wore the tie for the school. I still wear one of the ties on occasions when I think that I am waging a battle for the best interest of a science of schooling for children.

Fred liked to party!

One late evening, Fred, Frances, and I were having a cognac after dinner. It became quite late, and Frances decided to call it a day. Fred suggested that he and I have another one or two — and we did!

How I got in touch with Fred's roots, serendipitously.

In 1999, the government of Ireland made it possible to start a CABAS pilot school in Cork, Ireland. I later found out from Frances that Fred's family was from Cork and that she too had relatives from the area. So, we got Fred a happy school in the country of his roots. Other key players in making the school possible were Dolleen-Day Keohane, Denise



R. Douglas Greer (left) with Fred S. Keller wearing "save the children" ties

O'Sullivan, Olive Healy, and Dermot and Yvonne Barnes-Holmes.



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Winners of 2015 B. F. Skinner Foundation Student Awards Announced

Berkshire Association for Behavioral Analysis and Therapy (BABAT) recently announced winners of the 2015 B. F. Skinner Foundation Student Research Award and Student Poster Award. Congratulations!



Student Research Award:
Casey Dipsey, Caldwell University

Title: Using Behavioral Skills Training and Equivalence-Based Instruction to Teach Children Safe Responding to Dangerous Stimuli

Advisor: Dr. Jason Vladescu



Student Poster Award:
Zoe Newman, New England Center for Children, Western New England University

Title: Comparison of Positive and Negative Reinforcement Treatments of Socially-maintained Escape Behavior

Advisor: Dr. Allen Karsina

I Am Building a Pigeon Lab!

by John V. Keller, Ph.D.
Hendersonville, North Carolina



Fred S. Keller, a colleague and life-long friend of B.F. Skinner, was my dad. I probably owe him credit for the idea of having a private lab. In the basement of our family's home in Tenaflly, New Jersey, my father did some well-known studies of light aversion in the white rat. For the aversive stimulus, he used a goose-neck student lamp that he could switch on and off over the rat's cage. He recorded response latencies with a stopwatch and a clipboard. At night, he'd cover the rats' cages with his lab coat (to prevent drafts). The rats inevitably pulled bits of fabric into their cages. When he wore the lab coat, Dad looked quite hilarious — like he'd been attacked by a swarm of moths. It was a much simpler time. But some very good research got done nonetheless.

Fast-forward several decades. In 2015, I decided to retire and as a retirement project, to build my operant behavior lab that I call *The Geriatric Behavior Lab*, or GerBL for short — see www.gerbl.org. This is the first in what I hope will be a series of occasional reports on my progress. My motive for sending this report is two-fold: first, to gather whatever advice or ideas *Operants* readers might have and second, to provide myself with benchmarks by which to document my progress. I need whatever motivational tools I can come up with! This report is a compilation of emails I have sent to my friends in the course of 2015.

STAGE ONE

I was very slow getting started in part because of several competing activities (you can get very busy when you retire). But recently, I did finish building four sound-attenuating shells. These are chambers that will enclose the actual Skinner boxes (for pigeons), which I will be building next. The shells (see photos on the next page) are made of 3/4-inch scrap plywood that I had in my shop, and they are lined with 1/2-inch insulating foam board. A muffin fan is used for air circulation (activated via a microswitch when the door of the box closes), and I've also placed a small light on the rear wall to provide ambient illumination during experimental sessions.

I think the boxes will do a reasonably good job of eliminating noise distractions during the experiments. I used two smartphones to measure the sound attenuation of the chambers. One phone was tuned to a website that continually broadcasts white noise ([www.http://online-tonegenerator.com/noise.html](http://online-tonegenerator.com/noise.html)). I put this phone on an audio-docking station to produce some quite loud white noise. Then, I took a second smartphone, and with an app called *Decibels*, I was able to measure the sound pressure level three feet away from the dock both inside and outside the chamber. A 90db noise was reduced to 72db in my ini-



Dr. John V. Keller is trained as a research psychologist and for over 15 years, headed Organization Consultants, Inc. (OCI), a small management consulting firm based in Charlotte, NC. Dr. Keller received his bachelor's (1964) and master's (1966) degrees in psychology from Columbia University in New York. He received his Ph.D. in 1973 under Lew Gollub at the University of Maryland with a specialization in learning and sensory systems.

From 1974 to 1978, Dr. Keller taught and conducted operant research at Tilburg University in the Netherlands.

Dr. Keller has held senior-level research positions with Honeywell, Inc. and the U.S. Army Research Institute. And he has also worked in a clinical setting, serving as the Research Director and Senior Clinician at an 80-bed treatment center for emotionally disturbed adolescents.

In 1985, Dr. Keller joined Organization Consultants, Inc. as a staff consultant and became its president in 1997. OCI specializes in survey research, organization development, and human-resource systems development. This 40-year old firm has been recognized as one of the U.S.'s leading human-resource consultancies. OCI's clients include companies such as Duracell, Abbott Laboratories, Tupperware, ABARTA, Hunt Oil, AT&T, and General Dynamics.

While continuing his consulting on an occasional basis, Dr. Keller has returned to his "roots" in operant research. In 2015, he began to develop in an out-building behind his home in Hendersonville, NC a private pigeon lab that he calls GerBL. GerBL stands for Geriatric Behavior Laboratory, and it is "dedicated to the extension of a useful, engaged life in the aged through the study of basic processes in animal and human learning." "So far it's working," Dr. Keller says. "I feel very engaged and maybe even a little bit useful."



tial measurements, and this seems to be in the ballpark of (much more costly) commercial chambers. During experimental sessions, I will probably also



provide a masking white noise either in the chambers themselves or else as ambient noise in the room that houses them (I haven't decided which at this point). So, I think I'll be able to provide a good working environment for my pigeons.

I'm on to my next task: building the actual Skinner boxes in which the pigeons will be working. I'm patterning them on Lafayette Instrument's operant pigeon chambers (model 80005). As I don't have much in the way of metal-working tools, I'm going to see if I can't get a local metal shop to make the boxes' "intelligence" panels on which the pigeon keys (3) and feeder will be mounted. Jim Macdonall of Fordham University has very kindly given me a dozen used response keys and stimulus display units as well as three feeders. Most of the parts are usable, and I'm extremely grateful to Jim as these things are really expensive when purchased new. Once the pigeon boxes are completed, I will turn my attention to the control circuitry. That's when the fun begins!

Also, I expect to begin getting some plans and estimates for converting my shop (roughly 16 x 24 feet) into a proper lab. I want to be able to provide a clean, temperature-con-

trolled space that is at least as good as any university installation in terms of general hygiene and livability for the birds. I've begun looking into all the regulations related to animal experimentation. The rules are a bit daunting and are really intended for much larger installations — not a little 4-8 bird vivarium! They require, for example, the formation of an Institutional Animal Care and Use Committee and oversight by a veterinarian. These will be challenging hurdles, but I'm hopeful they can be surmounted. In the final analysis, I want a lab that provides the best possible treatment of the birds and a place I'm really proud of.

STAGE TWO

GerBL has a home! The past few months have been mostly spent remodeling my old workshop in order to have to a proper place in which to conduct research and house 6 to 10 pigeons. As you see from the photos below, glass patio doors and a small

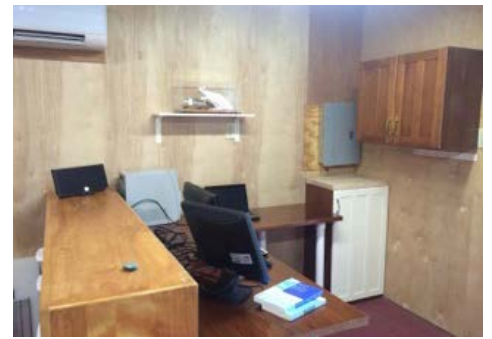


covered porch have been added, and the big, cluttered room that was once my shop has been subdivided.

It now has three rooms: one large (16x16-foot) area in which I have 1) a shop, 2) a small office area with



a desk and a computer to control the experiments as well as a couple monitors on which I'll be able to watch the



birds at work, and 2) an area where I'll have cumulative recorders, and a small bench to do electronic and computer assembly.

The second room (8 x 10 feet) will house the pigeons when they're being used in experiments (I'm thinking of having an outside loft for birds



when they're not in experiments in which they can have more space and can socialize). It has a window and is nice and airy.

The third room is just 6 x 8 feet and contains the four sound-attenuating chambers in which the birds will work.



The rooms are heated and air-conditioned. The two smaller rooms have vinyl-tile floors and washable walls. All the walls, interior as well as exterior, are insulated, and

there's also a small observation window in the pigeon room that allows me to keep an eye on the birds.

My next project is to make the actual Skinner boxes that will go inside the sound-attenuating chambers that I've already made. The metal shop that I thought would make the response panels, decided — after two months of repeated promises — they couldn't do it. So ... I'm going to have a go at it myself. I'll use an 18-gauge galvanized steel for the front and back panels and 1/4-inch plexiglas for the sides and top. Thanks to Jim Macdonall I have keys and feeders (I will need to buy one feeder).

Soon, I'll be going up to Baltimore to meet with Nancy Ator and Jonathan Katz (both U of Md, Ph.D.s). They've both generously offered equipment. It will be great seeing them (and possibly Lew Gollub too if it can be arranged).

STAGE THREE

When I first thought about spending my retirement building a lab and doing research, I wondered if it might not be a little unhealthy to take on such a solitary pursuit. After all, the psychologists tell us that one of the key components of a happy retirement is social interaction and a circle of supportive friends. Well, I'm happy to say, this project has turned out to be anything but solitary. *GerBL* has led to the rekindling of friendships many years old and the formation of new ones, and I'm amazed at all the help and encouragement I'm receiving.

In September, I heard from Marc Branch, a classmate at the Uni-

versity of Maryland and now Professor Emeritus at the University of Florida, that he had some pigeon chambers I might have. So, with U-Haul trailer in tow, I went to Gainesville, and there, Marc and I loaded up six three-key BRS/LVE pigeon chambers and lots more. I also heard from Nancy Ator (also a former Maryland grad-student colleague and now a Professor at Johns Hopkins) that she had some cumulative recorders (and assorted relay equipment) that were no longer in use. This led to a treasure trip to Baltimore where I collected Nancy's booty and combined that with a great reunion luncheon with Lew Gollub (my Maryland mentor and thesis advisor), Charlie Catania, Jay Miller, and Jonathan Katz.



Marc's chambers in their new home.

This semester I've been taking an evening class in computer repair and maintenance at a nearby community college. This enabled me (with the help of my classmates, the instructor, and my good friend Michael Atkinson) to put together my own computer. I probably didn't save much by building it myself, but I learned a lot in the pro-

cess, and the brute that I built should more than handle the running of the experiments along with general office tasks. My new PC even glows in the dark!



And, right now, I'm rewiring the pigeon chambers and preparing them for interface/control hardware that Jon Katz (NIDA) and Steve Dwor-kin (Western Illinois University) are getting together for me.

As I said already, I'm blown away by all this support. But I have to mention the greatest support of all is my wife Dawn. She even made a stepping stone for the new lab!



So that's it for now. Send me any suggestions, ideas, or just moral support. All is welcome! 🌈

***Operants* will continue publishing updates of John Keller's progress in upcoming issues. We also plan to publish a series of reports on people throughout the world who are coming up with creative and inexpensive ways to build operant chambers to conduct their own experiments. We will tell you about an operant chamber for studying mice behavior built from LEGOs as well as a 3D-printed one.**

The B. F. Skinner Foundation has also launched an initiative to collect operant chambers, cumulative recorders, and other retired equipment from the animal labs. The Foundation will ship it to schools, universities, and research centers worldwide. If you have equipment to donate or are looking for equipment, please get in touch with us at info@bfskinner.org.

Professor Arne Brekstad — the Father of Behavior Analysis in Norway

by Monica Vandbakk, M.A.

My first meeting with Professor Brekstad was at the annual meeting of the Norwegian Association of Behavior Analysis (NAFO) in 1999. I was a student, and it was my first presentation at the conference. I presented on increasing compliance behavior using principles of behavioral momentum. After my presentation, Professor Brekstad gave me a few technical comments based on my performance. I felt honored by his interest and comments. This was the first time I met Brekstad in person, but I had observed him on film several times many years before as he was teaching a young boy with autism to talk. Brekstad was one of the reasons why I became interested in behavior analysis — it seemed to work.

Brekstad worked for many years as a Professor of Psychology at Oslo University. He retired in 2001, the same year that Professor Erik Arntzen and Professor Per Holth submitted their Ph.D.'s. Later, Brekstad served alongside Arntzen and Holth as the editorial troika of the *European Journal of Behavior Analysis* (EJO-BA). Brekstad was the chairman of the board of the Norwegian Association when Skinner was made the very first honorary member.

Brekstad felt lonely since there were no like-minded psychologists around him when he graduated as a psychologist in the late 1950's. He was not satisfied with the knowledge he had as a newly-qualified psychologist. He thought it was too theoretical, and especially when he got his first child, Anette, he started to question what he knew about influencing or teaching children. He read some of Ivar Lovaas's work and discovered the power of reinforcement — particularly in interaction with children's behavior. For the first time, as Brekstad describes it, he realized that he, as a psychologist or father did not have any power: the power was all in the reinforcer.

Brekstad started working at a special school for boys with behavior challenges in Vestfold in 1969. At the same time, Ivar Lovaas came to visit from Los Angeles. This early meeting with Lovaas inspired Brekstad, and he discovered Allyon's token economy and started to read Skinner's *Contin-*

Mitt første møte med professor Brekstad var ved Norsk Atferdsanalytisk Forenings (NAFO) årsmøteseminar i 1999. Jeg var student og holdt min første presentasjon ved konferansen. Jeg snakket om å øke samarbeidsatferd ved å benytte prinsipper basert på atferdsmomentum, og etter presentasjonen kom professor Brekstad bort og gav meg noen tekniske innspill og gode tilbakemeldinger. Jeg var veldig beæret over hans interesse og kommentarer. Dette var første gang jeg møtte Brekstad personlig, men jeg hadde faktisk sett han mange flere ganger på diverse filmopptak, mens han trente en ung gutt med autisme i å snakke. Brekstad var en av grunnene til at jeg ble interessert i atferdsanalyse – det så ut til å virke.

Brekstad arbeidet i mange år som professor ved fakultet for psykologi ved Universitetet i Oslo. Han pensjonerte seg i 2001, det samme året som professor Erik Arntzen og professor Per Holth avsluttet sine doktorgradsarbeider. Senere var Brekstad en tredjedel av den redaksjonelle troikaen som gav ut *Den Europeiske Journalen for Atferdsanalyse* (EJO-BA), sammen med nettopp Arntzen og Holth. Brekstad var også leder av Norsk Atferdsanalytisk Forening (NAFO) når Skinner ble utnevnt som NAFOs første æresmedlem.

Brekstad tilhørte den faglige minoriteten da han ble ferdig psykolog sent på femtitallet. Han var ikke helt fornøyd med den kunnskapen han satt med som nyutdannet psykolog. Han opplevde at det var for stor vekt på teori og mindre på

praktiske ferdigheter, og dette ble han spesielt opptatt av da han fikk sitt første barn, Anette. Han begynte å lure på hva han faktisk kunne om å påvirke eller lære et barn noe som helst. Han leste arbeidene til Løvaas og oppdaget styrken i forsterkning – også i interaksjon med barns atferd. For første gang, som Brekstad selv beskriver det, oppdaget han at han ikke hadde noen påvirkningsmakt hverken som psykolog eller far, og at all styrken lå i forsterkeren.

Brekstad startet å jobbe ved en spesialskole for «vanskelige gutter» i Vestfold i 1959, og samme år komme Ivar Løvaas på besøk fra Los Angeles. Dette tidlige møtet påvirket Brekstad og han oppdaget Allyons tegnøkonomi og startet å



gencies of Reinforcement. The contact with Lovaas introduced Brekstad to a different ideology of psychology and research culture than what he had learned in school in Norway. Long thorough planning and short intensive intervention was the American way of doing it. Planning further progression during the process was more common in Norway.

Brekstad met Skinner twice, both times in 1983: first, in Lierse in Belgium at a conference and then later that year when Skinner visited Norway. In Lierse, Brekstad had a presentation, and after his talk, Charles Catania introduced him to Skinner. Later that evening, Brekstad sat next to Skinner at the dinner table. Skinner left the dinner early, Dr. Fergus Lowe took over the seat, and this led to a lifelong relation between Brekstad and Lowe.

Brekstad remembers his first meeting at the dinner table with Skinner. He asked Skinner about the status of punishment and whether it was a basic behavioral process. Skinner replied that it might be a little bit of a fundamental process since it involves the presentation of an aversive stimulus. But overall, there was only one basic process, and that was reinforcement. Skinner also emphasized that one should only deal with positive possibilities. This quote in particular has been significant for Brekstad.

Today, Brekstad takes care of his wife; he has three children and three grandchildren. He tries to keep himself updated academically, but today, his priorities are with his family.

Brekstad considers himself wholeheartedly a Skinnerian, and he has never found a reason to take distance from the field, even during the years of copious negative media coverage on behaviorism in Norway.

His favorite quote by Skinner is from *Beyond Freedom and Dignity*, where Skinner states: "A person does not act upon the world, the world acts upon him."

Brekstad strongly believes that there is no point trying to improve Skinner's work; the primary focus must be on expanding his work.



lese Skinners Contingencies of reinforcement. Bekjentskapet med Løvaas brakte Brekstad i kontakt med en helt annen forskningskultur enn det han var kjent med fra Norge. Den amerikanske måten å gjøre det på var gjennom lang og grundig planlegging og en kort og intensiv intervensjonsperiode. Den norske måten å drive forskning på var snarere å planlegge mens man holdt på.

Brekstad møtte Skinner ved to anledninger, begge ganger i 1983. Først i Lierse i Belgia på en konferanse og senere samme år da Skinner besøkte Norge. Brekstad hadde selv en presentasjon i Lierse, og da han var ferdig så ble han introdusert til Skinner av Charles Catania. Senere samme kveld hadde Brekstad Skinner ved sin venstre side under middagen. Skinner forlot middagen tidlige og Dr. Fergus Lowe tok over plassen. Dette var starten på et livslang bekjentskap mellom Brekstad og Lowe.

Brekstad husker godt sitt første møte over middagsbordet med Skinner hvor han spurte Skinner om hva han tenkte om straff, og hvorvidt han betraktet det som en grunnleggende atferdsprosess. Skinner svarte at straff kunne være en delvis fundamental prosess – ettersom det involverte presentasjon av en aversiv stimulus, men at han i det store og det hele mente det kun var én grunnleggende prosess, og det var forsterkning. Skinner understreket også at man bare bør forholde seg til positive anledninger (*positive possibilities*). Dette utsagnet har vært av betydning for Brekstad og han har brukt mye tid på å tenke over nettopp dette.

I dag tar Brekstad vare på sin kone, han har tre barn og tre barnebarn, og han prioriterer familien selv om han stadig forsøker å holde seg oppdatert faglig. Brekstad ser på seg selv som en helhjetet skinnerianer og han har aldri følt for å distansere seg fra feltet, selv under årene med mye dårlig presseomtale i Norge.

Hans favoritt-sitat av Skinner er fra *Beyond Freedom and Dignity*, der Skinner skrev "a person does not act upon the world, the world acts upon him."

Brekstad konkluderer med å understreke at det ikke er noe poeng i å forsøke å forbedre Skinners arbeider; hovedfokus må snarere være å utvide det.



About the Correspondent:



Monica Vandbakk has been a correspondent for *Operants* since January 2013. She works at Oslo and Akershus University College in central Oslo, Norway. She teaches in the bachelor's program in Social Welfare and the bachelor's and master's program in Behavior Analysis. She is affiliated with the research group of Professor Per Holth and Professor Espen B. Johansen, and her main interest is the area of conditioned reinforcement. Monica is also a board member of the Norwegian Association of Behavior Analysis. Prior to her employment at the University College, she worked at the University Hospital in Oslo, a more clinical and applied setting than teaching, and she still has some assignments for the hospital. Says Monica: "I feel fortunate that I have an opportunity to teach behavior analytic basic principles as well as radical behaviorism. I conduct basic research in the rat laboratory, and I supervise staff members in facilitating proper environmental conditions for people who need training and behavioral changes. I get the best of both worlds."

Monica completed her master's in 2008, and is currently working on her Ph.D. under the supervision of Professor Per Holth.

ABA Conference

December 4, 2015
Mt. Laurel, New Jersey



Above: Brett DiNovi and Dr. Julie S. Vargas before the conference

Below: Photos from Dr. Julie S. Vargas's presentation.



The Applied Behavior Analysis Conference organized by Brett DiNovi and Associates took place at the Weston Hotel Conference Center in Mt. Laurel, NJ on December 4, 2015. The one-day event drew over 350 participants. The keynote address *Growing Up With My Father, B. F. Skinner* was delivered by Dr. Julie S. Vargas. Her presentation created some memorable moments for the audience, as Dr. Vargas shared stories and pictures of her father's life and parenting style. She fondly remembered family summer vacations: "As much time as our father gave us during the academic year, we had even more of his attention during our summers on Monhegan Island — the mile-and-a-half-long island, an hour's boat ride off the coast of Maine. My sister and I explored the high cliffs on the backside of the island, discovered blackberries on little used trails, and generally went all over the island. My father loved to be out on the water. He bought me a Folbot, a rubberized kayak-shaped boat with lee boards and a lateen-rigged sail. It had a tiller that stuck out into the rear sitting space. Always on the lookout for improvements, my father replaced the tiller with a pulley system. Instead of holding your arm out in front of you, you could rest your arm on the side of the boat, moving a cord that ran around the sitting space to move the rudder. My father built a boat for my sister to row around the harbor, too. We kept both boats on Fisherman's Beach, high enough on the beach to escape the high tides of that northern latitude. I could not get my boat down to the water by myself. So my father solved the problem by building a carrier to help. He made a cradle for the bow that rested on two large wheels. By lifting the stern I could roll the boat down to the water's edge or push it back up to its resting place. Many days I went out sailing accompanied only by my dog or my guitar. The only rule I had about where I could go was to be back by dinner."

The keynote address was followed by presentations by Brett DiNovi, Matt Linder, Dr. Christopher Manente, Tony DiCesare, Dr. Beth Glasberg, Pierre Louis, and Joe Kendorski.



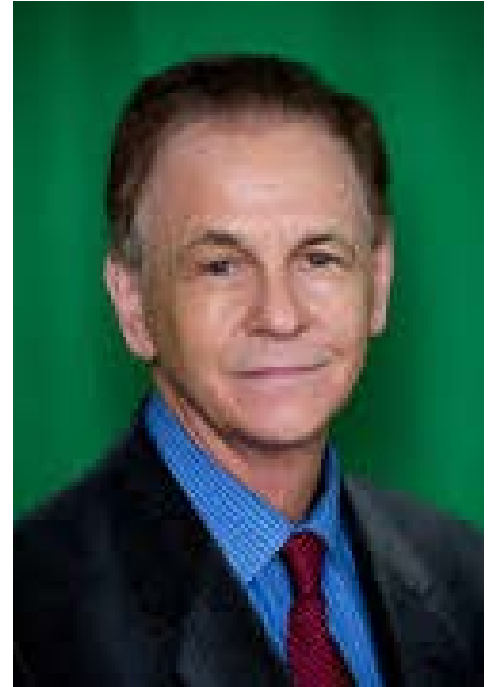
The FBI File on B. F. Skinner

W. Joseph Wyatt, Ph.D.
Marshall University
Huntington, West Virginia



In his autobiography, B. F. Skinner described learning that the FBI was monitoring his activities. Reading that, I was curious. Thus, in 1991, I wrote to the FBI and requested, under the Freedom of Information Act, the agency's file on Skinner. More than two years later, I received the file, although numerous sections had been blacked out.

As I read the three-inch stack of documents, it became evident that the FBI was concerned that Skinner may have been (reader, please sit down)...a communist sympathizer! According to the FBI's file, the scrutiny began in 1959



Joe Wyatt graduated from West Virginia University in 1980 with a Ph.D. in clinical psychology. He spent 34 years as a Professor of Psychology at Marshall University. During this time, Joe provided clinical consulting at various mental health agencies. He is board certified in forensic psychology and has provided expert testimony in more than 100 cases. He founded Behavior Analysis Digest International, serving as the editor for 22 years. Joe has written four books and an abundant number of publications.

This is a condensation of an article titled "Behavioral science in the crosshairs: The FBI file on B. F. Skinner" that first appeared in Behavior and Social Issues, 10, 101-109 in 2000.

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That is how many of the pages released by the FBI look.

when it was learned that Skinner was corresponding with a faculty member at Peking University in China. This was an era within the same decade as the redbaiting campaign by Sen. Joseph McCarthy in which fear of a communist takeover of the U.S. remained relatively high and quite irrational. It

was an era in which school children, like me, were shown films, complete with bleeding red maps of the U.S., warning us about the evils of communism and how our freedoms dangled by a slender thread above the roiling cauldron of an imminent communist takeover of America.

The field agent's notes in the FBI file revealed he had read *Walden Two*, and he acknowledged Skinner's precept that the scientist bears an obligation to society. But it remains unclear whether, in the agent's thinking, such an obligation could have comported with the Red Menace. Perhaps, the agent possessed a concern that Skinner felt society would best be served by the adoption of the precepts of communism. Whether or not, evidently, the flinty-eyed G-man's scrutiny was laid aside because little more came of the investigation. The agent reported his findings to FBI director J. Edgar Hoover who decided that no further action would be taken, given Skinner's status as a professor and the esteem in which Skinner seemed to be held within the academic community.

However, within a year, Skinner again came under the unblinking gaze of the agency, again due to baseless fears relative to his loyalty to America. The second investigation came about because Skinner, along with many other well-known figures, had signed an advertisement in support of theoretical chemist and Nobel Laureate Dr. Linus Pauling who had circulated a petition opposing further nuclear arms testing. The new investigation appeared to be motivated by the same anti-communism fervor as the first investigation. But it took an abrupt turn when the White House suddenly requested its own background investigation of Skinner for a very different reason — Skinner was being considered for a presidential appointment! The nature of the appointment was not mentioned in the file and to my knowledge, remains unknown.

Now, the FBI was dealing with more than just another perspicacious, potentially pink professor. Thus, the agency re-doubled its efforts. The responsible agent interviewed an individual who, decades earlier, had lived in the same building as Skinner in New York City. Not content with that person's reassurances, the agent also interviewed the building's supervisor and its elevator operator. None of them reported any pro-communist or other questionable activities. Other agents dug deeper. They searched his student file at Hamilton College and talked to a professor there. The agent's written report revealed a significant finding. The faculty member told the agent it was his understanding that Skinner had made something of himself.

Other agents interviewed former colleagues at Indiana University and at the University of Minnesota where

Skinner had held faculty positions, as well at Harvard where he had become an esteemed faculty member. The consensus: Skinner was thought of as an outstanding man in his field, of good character, and brilliant.

As yet unable to resurrect a single ragged remnant of red rebellion, the agents pressed on. They interviewed neighbors, former neighbors, credit agencies, and police officials. Much that was positive, and nothing negative came to light, the agents wrote to their superiors.

Then, with resolve known mostly to Navy Seals, the FBI's men (it would be a while before women became agents) went on to review even more records and interview additional people, including in Vermont where the Skinners vacationed as well as individuals with the Air Force where, to the FBI's evident surprise, Skinner had worked on a

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on.***

project involving a pigeon — in a bomb! They reviewed a curious *Life* magazine article that had to do with Skinner's design of a specialized crib for babies. And on it went. There was a meeting with a neighbor of the family in Scranton, Pennsylvania where Skinner had grown up 40 years earlier. The elderly woman couldn't remember the boy but recalled his mother as having been a lovely lady and his father a respected lawyer.

If nothing else, the FBI's review was thorough. An agent went to the New York City Library and read, or at least skimmed, the available books Skinner had written, *Science and Human Behavior*, *Walden Two*, *Schedules of Reinforcement*, and *Cumulative Record*.

Through it all, nothing subversive was uncovered. But just when the investigation's gas tank approached empty, another twist occurred. Skinner traveled to Russia! One has images of an agent who, upon hearing news, was launched from the chair behind his file-cluttered desk to a posture of hand-to-forehead shock. Skinner and other U.S. scientists visited the Russian laboratories then came home. It was May 31, 1961.

Although the exhaustive snooping into the life of an unoffending citizen had turned up much that was positive and nothing seditious, the era's paranoia

about communism ran deep. A week later, the FBI director wrote to inform the White House that the agency was continuing to investigate Skinner's loyalty and character, and that 18 additional individuals would be contacted. Moreover, Hoover added that the FBI would continue to check back to 1927, 34 years in the past.

Other Harvard faculty members were contacted. One professor, unnamed but possibly Fred Keller, said he had known Skinner since 1931 and had never had reason to question Skinner's loyalty, character, or reputation. One imagines Keller's almost audible eye-rolling as the agent

turned to leave his office. A second faculty member termed Skinner as “a brilliant scientist, loyal, and reliable and of excellent character...” Finally, FBI director Hoover again wrote to the White House saying, in essence, there was no unfavorable information on Skinner and the investigation had been concluded.

Looking back and finding that a leading scientist had been investigated, first because he had done nothing more than engage in scholarly correspondence and then because he had exercised his First Amendment right to freely express his opinions in a newspaper ad, casts an unfavorable reflection on the nation and the FBI of the era, even though the second inquiry evidently morphed into a background check for a possible presidential appointment.

Notwithstanding the massive accumulation of favorable reports about his character and loyalty to the U.S., in 1963, a San Francisco agent initiated yet another investigation when it was learned that Skinner was considering another visit abroad, this time to the Far East. In cloak and dagger fashion that was more suitable to the pulp detective novels Skinner enjoyed reading, the agent wrote that the FBI might wish to determine “...if SKINNER (*caps his*) does actually intend on travelling to Red China to see (*redacted*) and be a guest of (*redacted, but likely Professor Pei, to whom Skinner had sent books and journals*) located in Peking.” (*Parentheses mine, WJW*). The flurry of agency activity that ensued also revived the concerns about Skinner’s trip to Russia. Now more information was added to the file including passport photos and details about his trips to England in 1951 and 1928. Then, as quickly as it had begun, the new investigation died possibly because the winds of governmental concern were stirring in another direction.

By the mid-1960s, the nation had become fully involved in the Vietnam War. As the impact of the war came home to the country via the evening news, anti-war sentiment was growing across America. Twenty-five years later, writing his autobiography, Skinner said, “And I had contributed a few dollars to help pay for full-page advertisements in the *New York Times* in which I joined hundreds of other scholars in protesting the war and urging that it be ended.”

It seems strange, at least by today’s standards, that a simple exercise of one’s right to openly oppose a war would trigger another investigation of the inner workings of an individual who already had been scrutinized by every

means known to humankind, short of a colonoscopy. In fact, Skinner was anything but a wild-eyed protestor. He opposed war-related disruption of college campuses that was occurring across the country as anti-war protesters staged sit-ins at university buildings. In a note to himself, he took exception to Harvard students having taken over the school’s administration buildings. “It is ridiculous to consider that (to be) the mark of a democratic society,” he penned.

Looking back to that era, one may wonder why the FBI focused so heavily on seemingly pointless investigations of possible communist activities, whether real or as in Skinner’s case, imaginary, to the exclusion of its focus on actual criminal activity, particularly organized crime. Why had the FBI assigned 400 agents to track down communists and communist sympathizers, while deploying but two agents to investigate organized crime in New York City in 1959?

One answer may have come from J. Edgar Hoover biographer Anthony Summers. In a 1993 book, Summers described how an aging mob boss, Carmine Lombardozi who had worked with Mafia Chief Frank Costello, put it. “(Costello and FBI director Hoover) had contact on many occasions and over a long period. Hoover was very friendly towards the families. They took good care of him, especially at the races...they had an understanding. He would lay off the families, he would turn a blind eye...” Another mob boss, Joseph Bonanno, pointed out there were ways other than brute force to deal with Hoover. “...(H)e wouldn’t interfere with us and we wouldn’t interfere with him.” As well, Summers believed the mob had blackmailed Hoover with evidence that he was gay which, if revealed, would have ended Hoover’s career, given the anti-gay tenor of the times.

Well aware that he was a frequent target of trench-coated FBI surveillance, Skinner was philosophical about the agency’s interest in him and in other scientists. In his autobiography, he described wondering whether the government resented providing grant money to its critics. He wrote, “Shortly after publication of *Beyond Freedom and Dignity* (in 1971) I had my answer.

Congressman Cornelius E. Gallagher, speaking on the floor of the house, questioned the propriety of my NIMH Career Award...Gallagher was proposing a ‘committee on privacy, human values, and democratic institutions...designed to deal specifically with the type of threats to our Congress and our constituents which are contained in the thoughts

**One professor,
unnamed
but possibly
Fred Keller,
said he had
known Skinner
since 1931
and had never
had reason
to question
Skinner’s
loyalty,
character, or
reputation.
One imagines
Keller’s almost
audible eye-
rolling as the
agent turned to
leave his office.**

of B. F. Skinner.” Rep. Gallagher was not alone. Spiro T. Agnew, the nation’s Vice President under Richard Nixon, and who, like Nixon, was forced to resign under threat of indictment (Agnew had taken bribes from contractors prior to becoming Vice President), referenced the recently published book *Beyond Freedom and Dignity* saying, “...Dr. Skinner holds in effect, that man has neither soul nor intellect and is completely a creature of his environment...Skinner attacks the very precepts on which our society is based...”

It seems incomprehensible that the government

would waste resources on repeated investigations of B. F. Skinner. But considering the context, with its rampant fear of communism, fear that consumed the nation for more than 40 years following the end of World War II, the FBI’s multiple investigations may be better understood. Today, we live within a new context, one in which paranoia associated with the term “communism” has faded, replaced with a succession of the next great things to be feared – socialism, terror, immigrants, Islam, guns, gun grabs, gay marriage, civil rights, unions, and more – imaginary or not.

MAIL [REDACTED]

SEP 19 [REDACTED]

NAME [REDACTED]

SEP 18 1975

DR. B. F. SKINNER

Captioned individual, who you advised is affiliated with Harvard University, 33 Kirkland Street, Cambridge, Massachusetts, may be identical with Dr. Burrhus Frederic Skinner, born March 20, 1904, at Susquehanna, Pennsylvania.

In 1966 a Harvard University official advised that the Pavlovian Society held a meeting in late February, 1966, at Harvard. The Society was composed of students or those friendly disposed to the teachings of the noted Soviet psychologist Pavlov who was universally famous for his experiments dealing with condition reflexes among animals. The host for the Harvard meeting was Psychology Professor Burrhus F. Skinner, who had become famous for, among other things, his experiment dealing with pigeons who are conditioned to play ping pong.

(105-149981-3 p.2)

Dr. Skinner was the subject of a White House name check in 1968. A copy of the FBI memorandum dated November 1, 1968, citing the enclosure of the results of an applicant-type investigation conducted by the FBI in 1961, is attached herewith with a similar copy of that memorandum dated May 31, 1961.

(161-595-30; 105-80559-8)

The central files of the FBI, including the files of the Identification Division, contain no additional pertinent information concerning captioned individual based upon background information submitted in connection with this name check request.

Enclosures (2)

EX-106

DELIVERED BY LIAISON ON 9/19/75

REC-2 / 105-80599-10

10 SEP 22 1975

per request of [REDACTED], the White House.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED DATE 9-24-79 BY SP-2 [REDACTED]

Agreed 9803 (352112) 9/24/93

70 OCT 2 1975

TELETYPE UNIT

We liked this comparison of what Pavlov and Skinner are famous for.

EABA Summer School



**Katerina Dounavi, Ph.D.
Queen's University Belfast
Northern Ireland, U.K.**

In July 2015, the 1st Summer School organised by the European Association for Behaviour Analysis (EABA) took place in beautiful Rethymno (Crete, Greece). Support for the event was provided by Departments of Psychology of the University of Crete and Panteion University of Athens together with the Hellenic Community for Behaviour Analysis. The event attracted a group of well-motivated and knowledgeable undergraduate and postgraduate students as well as professionals working in the field of behaviour analysis, all of whom attended lectures offered by instructors interested in disseminating the science without receiving a monetary remuneration.

The first week of the Summer School took place between the 6-10 July and included a morning five-day lecture series entitled “The relation between basic science and clinical analysis and intervention: Behavioural excess and reinforcement processes” delivered by Professor Ricardo Pellón (PhD; [Universidad Nacional de Educación a Distancia](#), Madrid) and an evening five-day lecture series on “The analysis of verbal behaviour” delivered by Dr Katerina Dounavi (PhD, BCBA-D; [Queen's University Belfast](#) & [Magiko Sympan](#)).


The second week continued between 13-17 July with

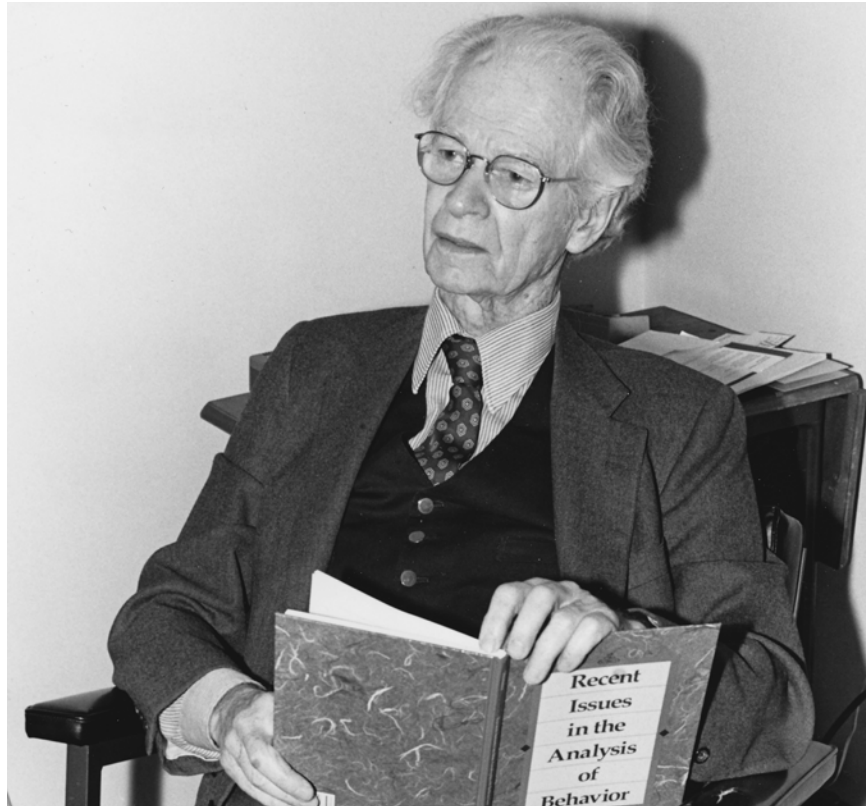
exciting learning opportunities created in a morning five-day lecture series entitled “The relation between basic science and clinical analysis and intervention: ‘Dysfunctional cognition’ and aversive control processes” delivered by Professor Robert Mellon (PhD, BCBA; [Panteion University](#), Athens) and an evening five-day lecture series on “Curriculum development for persons with Autism Spectrum Disorder utilizing video technology and functional behaviour assessment” delivered by Dr Christos Nikopoulos (PhD, BCBA-D; [Autism Consultancy Services](#), London & [BACB](#)).



Pictured (left to right): Ricardo Pellón, Katerina Dounavi, Christos Nikopoulos, Robert Mellon

A social weekend was organised between teaching weeks by George Kandyliis, the local coordinator, allowing students and instructors to meet and chat in an informal manner while visiting the island of Crete and enjoying the sunny weather and beautiful beaches, therefore providing additional strong reinforcers for participating in the Summer School!

Make sure you receive news on the next Summer School planned to take place in 2017 by following EABA news <http://www.europe-anaba.org/>! 



In January 2016, the B. F. Skinner Foundation launched a new project — *Skinner's Quote of the Day*. Dr. Per Holth, Professor of Behavior Analysis at Oslo and Akershus University College in Norway, selected the set of quotes from *Science and Human Behavior*. These quotes will be published throughout 2016 every workday (Monday through Friday) on the Foundation's website: <http://www.bfskinner.org/category/quotes/>. We duplicate the daily quote at this Facebook public forum:

<http://on.fb.me/1oIUF6N>.

RSS feed for "Skinner's Quote of the Day" is available here: <http://www.bfskinner.org/category/quotes/feed/>.

Enjoy the quotes, and feel free to share and discuss them on our website or Facebook!



B.F. Skinner

B. F. SKINNER FOUNDATION