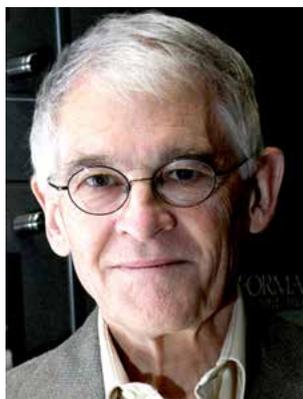


## Scoping Out Behavior

Andy Lattal

West Virginia University

Cambridge Center for Behavioral Studies, Member, Board of Directors



Modern periscopes first appeared on submarines in the mid-19th century, a creation of French chemist-inventor Hippolyte Marié-Davy (1820-1893). By the time of the First World War (1914-1918) they were *de rigueur* on submarines. They also found use in the trenches of the Great War as a means of scoping out the enemy without getting one's head removed by unfriendly fire (Figure 1). During the Second World War (1939-1945), artillery spotters used them to direct fire and tank drivers used them to see where their behemoths were headed, lest the driver be be-headed. Despite these nefarious applications as a tool of war and destruction, by the 1950s periscopes were harnessed to more peaceful and humane purposes by behavioral psychologists.

Skinner included in his article "The experimental analysis of behavior" (1957) the photograph shown in Figure 2. It illustrates my often-made point that in looking at old photographs the most interesting things are to be seen not in the central object, but in the background. Ogden Lindsley is shown examining one of many relay racks filled with electromechanical programming equipment controlling operant conditioning experiments on psychiatric patients. At his back on the left side of the photo is another person who looks like the Headless Horseman (minus the horse) in Washington Irving's famous short story about eerie events in Sleepy Hollow. In fact, he has a head, but it is covered so that, by blocking out ambient light, he can better see what a participant is doing in the room behind the wall he is facing. He is observing the participant with a "behavior-scope," a periscope for behavior analysts. Lindsley (1956) first described it as a "mirror-and-lens system, and this provides hidden observation facilities through a metal screen in the ceiling of the experimental room" (p. 126). Given the time of the photograph and the fact that the observer was covering his head to prevent ambient light leakage into the "Skinner room," the version in the photo most likely is a Lindsley original design. A later commercial version described in a 1964 technical note in the *Journal of the Experimental Analysis of Behavior*, corrected the light leakage problem, the authors noting that "[a]s no reverse light leakage occurs, it is unnecessary to darken the observation area. This is a major advantage for the investigator who wishes to have ready access to both the observation system and the controlling and programming equipment in a well lighted apparatus area" (Asano & Barrett, 1964, p. 430). The behavior-scope described in the technical note is diagrammed in Figure 3. Looking through the eyepiece places the observer in contact with a



Figure 1. Australian troops in the trenches of WWI using a periscope to scope out the enemy.



Figure 2. Ogden Lindsley in the first human operant lab, located at Waltham State Hospital in Massachusetts. The figure of interest is the “headless horseman” behind Lindsley and to his left. The labels “a” and “b” are on, respectively, a reinforcer dispenser and the head cover for a second behavior scope, not being used.

reflected image detected by the behavior scope’s wide-angle lens system (labeled “b” in Figure 3). The behavior-scope was manufactured by the Shintron Company in Cambridge, MA. The company apparently exists today, as an electrical and electronics manufacturing company. The history of the behavior-scope’s commercial development and success, however, is a topic for another historian of behavior analysis to pursue.

A hallmark of operant conditioning laboratory research always has been to optimize control by isolating the participant from distractions; hence the “Skinner box.” At the same time, it always has been a desirable practice, but a practice not always practiced, to know what the participant was doing in addition to responding on the operandum provided in the box. Heron and Skinner’s (1939) early candy-barrel operant chamber, shown in Figure 4, did not allow such monitoring in that the rat was completely enclosed in the sound-attenuating barrel. The peephole of the sort found today in apartment entry doors was invented by George Wainwright in 1932. By the 1950s, these peepholes were common features on operant chambers for animals, but when this device first appeared on a chamber is unknown, at least to the present author. Lindsley was among the first, if not the first, to create a “Skinner box for humans,” or maybe more accurately, a “Skinner room.” In so doing, it was infinitely reasonable to wonder what else the participant was doing besides operating the “Lindsley operandum” in his “Skinner room.” Enter the practice of scoping out the participant’s behavior with, what else? A behavior-scope.

A final aside: In the same decade the behavior-scope first appeared in Lindsley’s human operant lab, a 1956 #1 hit song by Jim Lowe asked the question “What’s behind the green door?” If Lowe had had access to a behavior-scope, the song might never have been written.

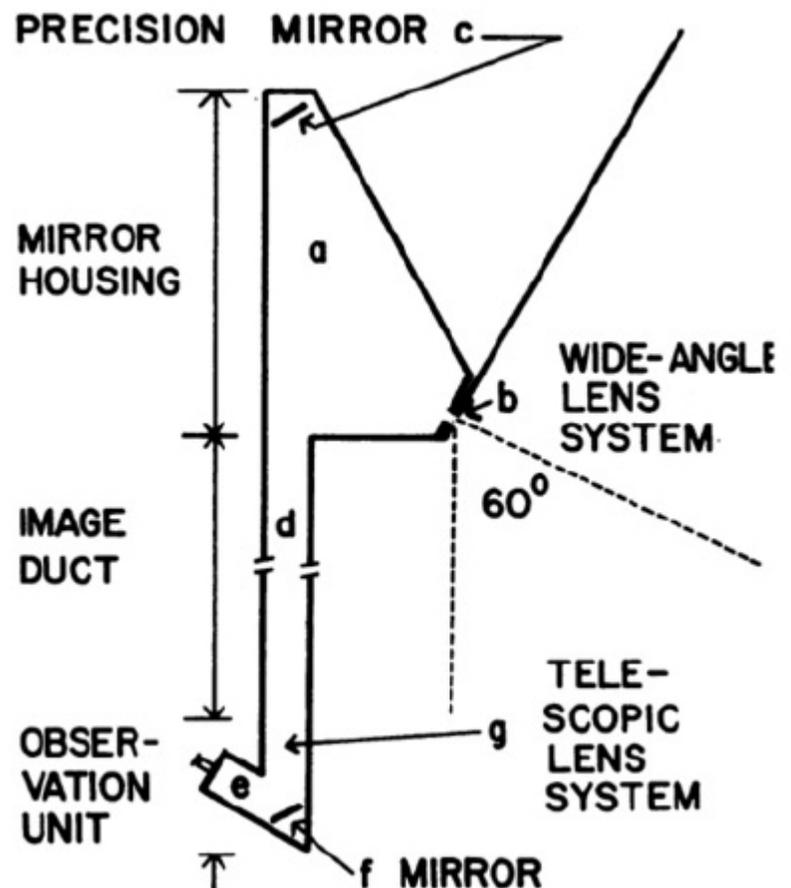


Figure 3. Diagram of the Shintron Behavior-scope described by Asano and Barrett (1964).



Figure 4. A "candy barrel" operant conditioning chamber of the sort reported by Heron and Skinner (1939). The rat work area is located behind the dark circle in the center of the left end of the barrel. It pulls out, revealing a 6 inch or so diameter tubular-shaped chamber with a hole in the top for inserting the rat.

### References

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