

the water, or even the whole body if the person is inside the tank. The sentence "person-fetch" will result in the dolphin pushing a person in the tank to the tank wall.

"Fish" is both a reward, given for good performance, and an object. If instructed, the dolphins will fetch or mouth a fish tethered to a string to obtain another fish as reward. On occasion, if they approach a fish incorrectly, in the case where another object has been named, and become aware of their error through the absence of the "Yes" sound, they may quickly eat the tethered fish, taking it off the string first. "Water" refers to a stream of water that is projected into the tank from a plastic pipe on the tank wall. Water can be successfully coupled with any of the verbs listed that make sense in combination with it. In response to "water-mouth," for example, the dolphin will open its mouth to allow the stream of water to strike inside. "Fetch-water" is an excluded pair, since there is no available way for the dolphin to execute this instruction, although on the few occasions when, out of curiosity, we did give the instruction, the dolphins attempted to push the water stream along with their jaw, as in fetching other objects.

"Gate" and "window" are permanent fixtures in the tank. "Panel" refers to an aluminum panel having a movable lever that is normally used at night to allow the dolphins to turn on or off or select among various tape-recorded acoustic stimuli, including dolphin sounds, whale sounds, human voices, music, etc. "Speaker" is an underwater sound projector that can be moved by the trainer (but not by the dolphin) to various locations in the tank. Finally, "left" and "right" are referenced to the dolphin and are normally used in compound instructions to Akeakamai, such as "Right-Ball-Go over," meaning go to the ball to your right (and *not* to an identical one to your left) and jump over it. These spatial instructions are followed accurately by Akeakamai.

A complete instruction to a dolphin begins with her name, followed by a sound denoting "Ready" when she responds to her name by pressing a target at her station, followed by a sentence in the order noun-verb. If the instruction is executed correctly, a sound signifying "Yes" is heard, then the dolphin's name and, finally, the word for "Fish." The sequence beginning with "Yes" is omitted if the instruction is executed incorrectly and occasionally a sound denoting "No" ("Incorrect") may be played. Playing of "No" commonly produces emotional responding and its use is restricted to situations that in the judgment of the trainer may be informative for the animal.

The only structurally varying segment of the instruction is the particular noun-verb sequence. For Phoenix, these instructions are given as sounds, each 0.5 to 1.0 sec in duration with a pair separated by 0.25 sec. All sounds and intervals between sounds are generated by computer and projected underwater into the tank. For Akeakamai, the sequences were initially given as sounds also, but in later training only manual gestures were used. New words introduced to Akeakamai continue to be gestures, while new words introduced to Phoenix are always sounds. For the gestural instruction, verbs are one-handed signals, while nouns are two-handed. The gestures are short in duration, typically 1- to 2-sec