YERKISH

Authored by

mohammad looti

October 23, 2025

Yerkish

Primary Disciplinary Field(s): Comparative Psychology, Primatology, Cognitive Science, Psycholinguistics.

1. Core Definition and Function

Yerkish is a meticulously engineered artificial language, often termed a lexigram language, developed specifically for comparative studies into the linguistic capacities of non-human primates. The essence of Yerkish is its reliance on geometrically structured symbols, known as **lexigrams**, which are displayed on a specialized keyboard or interface. Each lexigram functions as a whole word or morpheme, representing objects, actions, modifiers, or abstract concepts, without utilizing the phonetic or alphabetical structures inherent to human language. This design choice was deliberate, aiming to bypass the physical and vocal limitations of primates while testing fundamental psychological questions regarding symbol acquisition, syntax, and intentional communication. The language serves as a crucial tool for researchers investigating whether primates can move beyond simple stimulus-response learning to grasp complex cognitive processes necessary for true language use, such as displacement (communicating about things not immediately present) and productivity (creating novel, meaningful sentences).

Unlike natural human languages which evolve organically, Yerkish is a constructed language with a defined, logical structure and a controlled vocabulary. Its primary utility lies in providing a quantifiable, objective measure of communication. When a primate selects a sequence of lexigrams on the keyboard, the system records the exact order and timing, allowing researchers to analyze the resulting sequences for evidence of grammatical rules, semantic understanding, and conversational turn-taking. This rigorous methodology attempts to eliminate ambiguity inherent in interpreting spontaneous primate gestures or vocalizations, thereby providing clearer data on cognitive capabilities. The language framework itself is based on basic grammatical principles, requiring the subject to adhere to specific sequencing rules to achieve a desired outcome, such as requesting a specific food item or tool, thus demanding both semantic recognition and rudimentary syntactic understanding.

2. Etymology and Historical Development

The name **Yerkish** is an homage to the Yerkes National Primate Research Center in Atlanta, Georgia, where the foundational research and development of the language took place. The language system emerged in the early 1970s as part of the ambitious LANA Project, led principally by psychologists Duane Rumbaugh and Ernst von Glasersfeld. The goal of the project was to move beyond the earlier, often inconclusive, sign language studies (like those involving Washoe or Koko) by utilizing a computerized, highly controlled environment. Von Glasersfeld, an expert in

cybernetics and semiotics, was instrumental in designing the physical structure of the lexigrams and the operational system that linked the symbols to computerized outcomes.

The first and most famous subject of the Yerkish language system was the chimpanzee named Lana. The experimental setup was highly sophisticated for its time, involving a dedicated room where Lana interacted with the lexigram keyboard connected to a computer. This computerized environment allowed for continuous data collection and ensured that the reinforcement provided (e.g., dispensing juice or a banana) was contingent only upon correctly sequenced and meaningful lexigram input. The development of Yerkish marked a critical turning point in comparative psychology, shifting the focus from simple vocabulary acquisition to the complex structure of symbol manipulation. Subsequent studies utilizing variations of lexigram systems, most notably those conducted by Sue Savage-Rumbaugh with the bonobos Kanzi and Panbanisha, further refined and expanded the methodology, though these later projects often incorporated more naturalistic language exposure rather than the strict, structured training utilized initially with Lana.

3. Key Characteristics: The Lexigram System

The defining characteristic of Yerkish is the use of **lexigrams**--non-representational geometric shapes used as symbols. These shapes are typically composed of overlaid or interacting forms, ensuring that they do not visually resemble the object they denote, thereby forcing the learner to associate the symbol purely based on convention, a critical feature of true linguistic symbols. The vocabulary is displayed on a keyboard, often with dedicated keys for specific objects (e.g., banana, juice), actions (e.g., give, groom), and relational terms (e.g., please, period).

Crucially, Yerkish incorporates specific syntactic rules, making it fundamentally different from a mere set of paired associations (e.g., pressing button A gets reward A). For Lana to request juice, she might have to type a specific sequence, such as "PLEASE MACHINE GIVE JUICE," following a defined grammatical structure (requester-verb-recipient-object). If the sequence was incorrect, the machine would often not deliver the reward, or the input would be flagged as syntactically invalid. This requirement for ordered input was designed to test whether primates could internalize and apply grammatical rules, which is considered a hallmark of true language capacity. The system also utilizes color coding and distinct geometric arrangements to aid in the differentiation and memorization of the growing lexicon, which in the case of Lana, eventually included several hundred symbols.

4. Research Subjects and Applications

The primary application of Yerkish was the study of the chimpanzee **Lana**, whose performance provided groundbreaking, though controversial, evidence of complex communication. Lana demonstrated the ability to create novel combinations of lexigrams and correctly interpret

syntactically complex sentences. For instance, she was able to distinguish between requests involving two different experimenters and two different objects, suggesting an understanding of the semantic roles within the sentence structure. Furthermore, Lana could construct novel requests, demonstrating productivity--the ability to generate combinations not explicitly taught--such as asking for an unfamiliar object by describing its color and type (e.g., "APPLE WHICH IS ORANGE" when referring to a piece of orange fruit).

Following the initial success of the LANA Project, Yerkish and its lexigram derivatives were applied to other primates, including Austin and Sherman, who were trained to use the lexigrams to categorize objects and communicate about them with each other--a demonstration of symbolic reference crucial for shared communication. These later studies focused heavily on testing the subjects' capacity for symbolic communication, displacement (talking about absent items), and joint attention. The cumulative application of Yerkish methodology helped solidify the idea that primates possess significant cognitive capabilities for symbolic learning, even if the depth of their linguistic competence remains a matter of scientific debate.

5. Theoretical Significance in Primatology

Yerkish holds immense theoretical significance because it offered the first highly controlled, quantitative method for assessing primate language acquisition, moving the field past the difficulties associated with interpreting American Sign Language (ASL) usage by chimpanzees. The computer interface provided verifiable data that could be statistically analyzed, reducing the risk of anthropomorphic projection or observer bias--a common criticism leveled against earlier language studies. The results demonstrated that chimpanzees could indeed acquire a substantial vocabulary of arbitrary symbols and utilize them sequentially.

The structure of Yerkish also forced researchers to grapple with fundamental questions about the nature of language itself. If a chimpanzee could reliably follow syntactic rules to achieve a goal, did that imply an innate grammatical capacity similar to that proposed by Noam Chomsky, or was it a sophisticated form of instrumental learning? The success of Lana and others using Yerkish provided strong empirical counter-evidence to the strict behaviorist view that animals could only learn simple stimulus-response pairs, suggesting instead that primates possess the cognitive flexibility required for symbolic thought and rudimentary syntactic manipulation, thereby enriching the debate surrounding the evolutionary origins of language.

6. Debates and Criticisms: Language vs. Conditioning

Despite the remarkable achievements of the Yerkish projects, the system remains at the center of a significant academic controversy, stemming from the question posed in the original definition: whether animals trained with Yerkish demonstrate **authentic language capacity**. Critics, most

notably those aligned with stricter definitions of language requiring innate recursive syntax (e.g., Chomskyan linguistics), argue that the primates' use of Yerkish represents highly successful **operant conditioning** rather than true linguistic comprehension.

The core criticism rests on the argument that the lexigram sequences are often functional chains designed to achieve immediate reinforcement (e.g., getting food or playtime), rather than utterances driven by communicative intent or complex thought. If Lana types "PLEASE MACHINE GIVE JUICE," is she demonstrating an understanding of the grammatical relationship between the words, or is she merely executing a learned behavioral chain that past experience has proven successful in triggering the juice dispenser? Furthermore, critics point out that the productivity shown by the animals is often limited and highly contextualized to the laboratory environment, lacking the generative complexity and open-endedness observed in human children. While proponents of Yerkish research argue that the subjects display displacement and symbolic reference, opponents maintain that the lack of true recursion, finite syntax, and the inherent reward-driven nature of the interactions prevent Yerkish usage from being classified as true language.

7. Further Reading

Yerkish (Wikipedia)
Language Research Center at Georgia State University (Successor to Yerkes research)
Lana (chimpanzee)
Duane Rumbaugh Biography