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Chaos in Language, Arts and Engineering

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The paper utilizes both modeling and simulations to demonstrate chaotic phenomena in the areas of language, arts, and engineering. In language, special attention is paid to speech development in monolingual and bilingual children. The second author's recent data manifests the existence of strange attractors in a bilingual child's development of consonants in English and Greek between the age of two years and nine months and three years and seven months in a chaotic day to day pattern of development. In music, deterministic recurrence maps generalizing the classical logistic map are applied to create chaotic compositions in which the frequency of musical notes corresponds by a shift to that of the rainbow colors. In engineering, focus is on the ultrasonic non-destructive evaluation of materials where the effect of different simulated chaotic distributions of defects on the reflection of ultrasonic waves is presented.