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An Ergodic Theory for the Emergence and the Evolution of Preference Relations

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This paper presents a theory describing the emergence and the evolution of preference relations over (real) time. the subject or consumer is regarded as immersed in a random environment of the Poisson type. Events arise at random times which consist of tokens of information about the alternatives. Some of these tokens have the potential of creating or modifying some edges of the graph of the preference relation. General axioms are given which lead to a stochastic process of Markovian character. In a special case of these axioms, a random utility model is obtained as an asymptotic result. Specifically, it is shown that the Markov process converges to a random walk on a unique ergodic set composed of all the rankings of the set of objects. Precise asymptotic results are derived and the explicit expression for the probability distribution on the set of rankings is obtained. In another special case, the asymptotic random walk on on the set of all weak orders. It is also shown how the theory can account for the resemblance between preference relations obtained, from the same subject, at time t and t + k.