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In a mathematical sense, the descriptions are finite and cannot be extended infinitely, as they are restricted to an integer value. For a point in time to which we assign a description, we should have observed an organism with that description. Since this is often not possible, we consider the span of a type of descriptions. A description is fixed as a type, and we see that the probability of a type grows with its length. If we now generalize the formalism to allow for a stochastic character to descriptions, we may ask how the probability of observing a type of description for a given event grows with the length of the descriptions. We should expect that the length of descriptions to have a probabilistic character. Here, we model the length of descriptions, and show that their logarithmic growth can be traced back to the statistical mechanics of entropic models in the thermodynamic limit. First, we study a special class of entropic models: the q-exponential family of entropies for an alphabet of q elements. In the thermodynamic limit of the exponential family, we define our own entropy (extended exponential family) for a finite alphabet. It grows exponentially fast with the length of the descriptions, thus mimicking the geometric growth of entropy in Boltzmann statistics. Second, we study the properties of the logarithmic growth of the entropy for a Boltzmann distribution, and show that it results in a power law growth of probabilities. This is a consequence of the statistical distribution of the entropic weights of the microstates. The Boltzmann distribution is a special case of the exponential family, with the exponential density of the q-exponential family. Our work suggests that the logarithmic length dependence of entropy in biological contexts originates from a statistical weighting of states in the underlying entropic model. One might argue that this could not be the case, as the biological systems operate on much smaller scales than the thermodynamic limit of the exponential family. However, one should not rule out the occurrence of logarithmic patterns, if their system sizes are in between the limits. Even such cases can be treated, as the logarithmic patterns would not be restricted to length scale. We show that this is indeed possible in a limiting process from an entropic model. Logarithmic growth of entropy ---------- The statistical weights are the probability densities of the microstates in a Boltz

Tutorial: Hall, B.K. and Hallgrimsson, 2008 - Strikberger's Evolution. 4th edition. John Bartlett Publishing, Sudbury, Massachusetts. 2. Additional reading material. Book: "Theory and practice of the theory of evolution" ed. E.S. Kubryakova, Moscow, "Enlightenment", 1996. Textbook: Kubryakova E. S. "A Brief Essay on the Theory of Evolution", ed. V.V. Novikova, Moscow, "Enlightenment", 1988. 3. Internet resource. Wikipedia.org. 4. Further reading. fffad4f19a