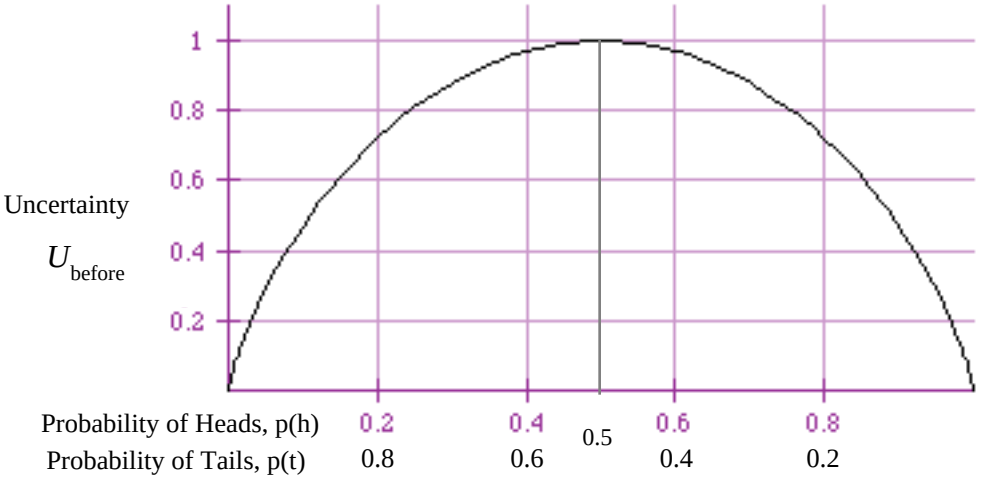


Figure 1.1 How uncertainty varies with coin bias (or probability distribution in the two-possibility case.

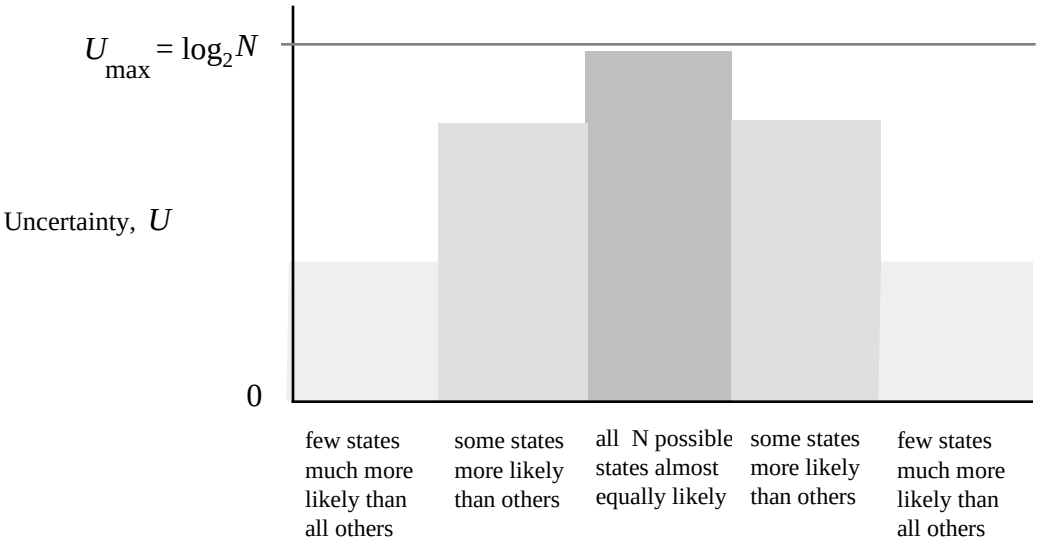
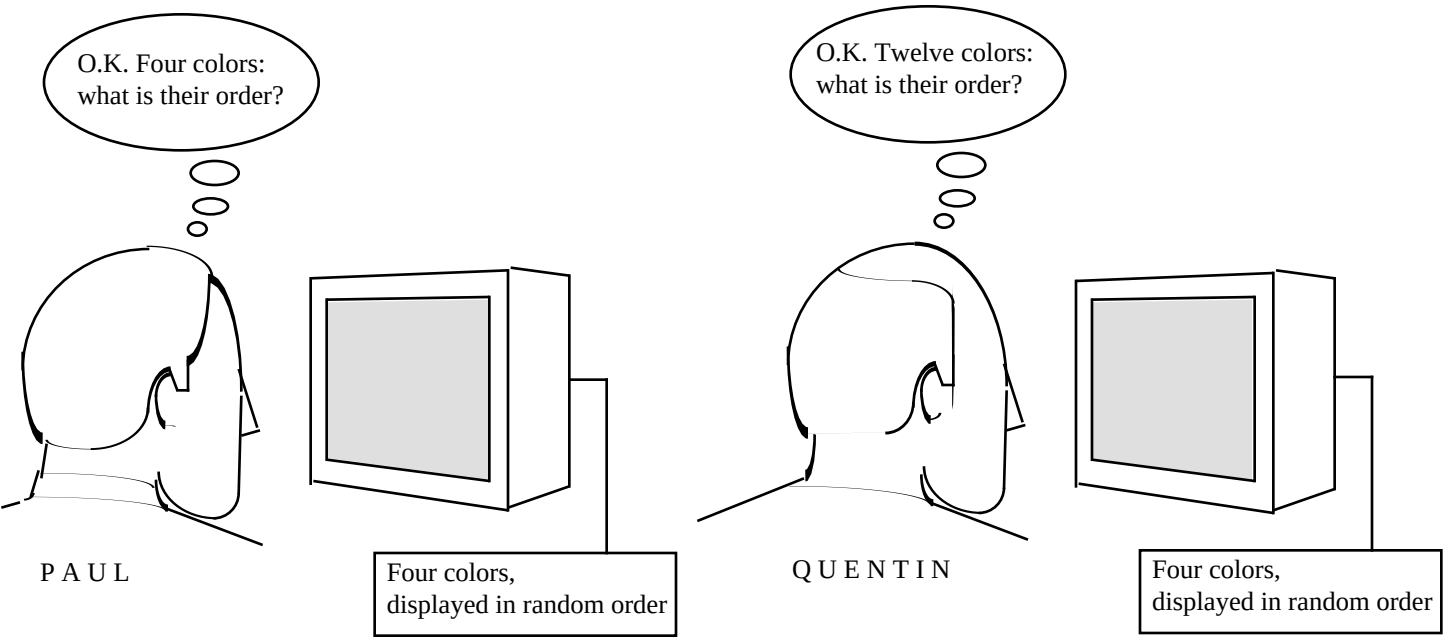


Figure 1.2 How uncertainty varies with probability distribution in the many-possibility case.



EXPERIMENTER TO PAUL: "Four colors will be displayed in some repeating pattern. After studying the screen's behavior, predict the next color."

EXPERIMENTER TO QUENTIN: "Twelve colors will be displayed in some repeating pattern. After studying the screen's behavior, predict the next color."

Figure 1.3 Paul and Quentin "face the World"

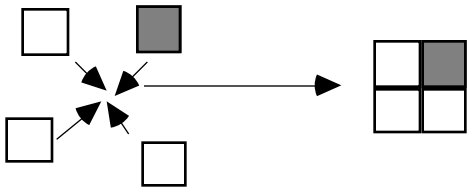


Figure 1.4 A field of four cells.

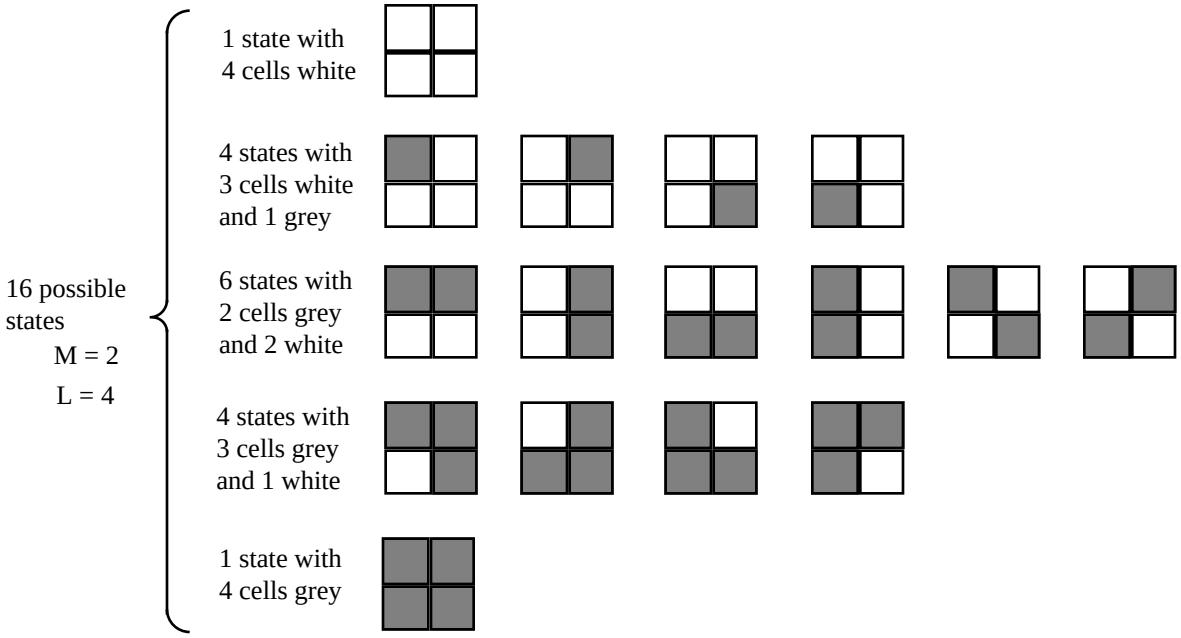


Figure1.5 The sixteen states of a 4-cell ensemble, each cell capable of occupying one of two states.

	1	2	3	4	5	6	7	game
	.5 .05 .1 .05 0 .05 .1 .05 .1	X .1 .2 .1 .1 .05 .2 .05 .2	X 0 O 0 .1 0 .4 0 .5	X .1 O .1 .5 .1 .1 .1 X	X 0 O 0 O 0 1 0 X	X 0 O .5 O 0 X .5 X	X O O 1 O O X O X	X O X O X O X
L	= 9	8	7	6	5	4	3	-
C_{pot}	= 3.2	3	2.8	2.6	2.3	2	1.6	1
C_{obs}	= 2.4	2.8	1.4	1.8	0	1	0	-
R	= 0.8	0.2	1.4	0.2	2.3	1	1.6	-

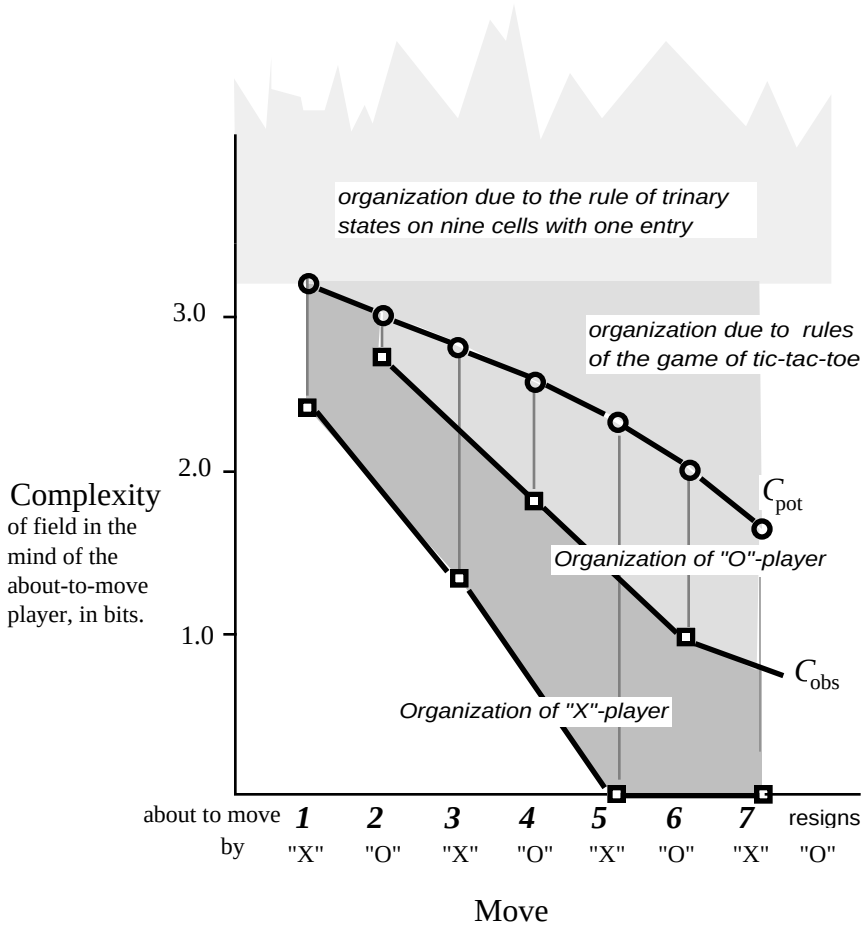


Figure 1.6 Move by move complexity of the field facing each player of a game of tic-tac-toe.

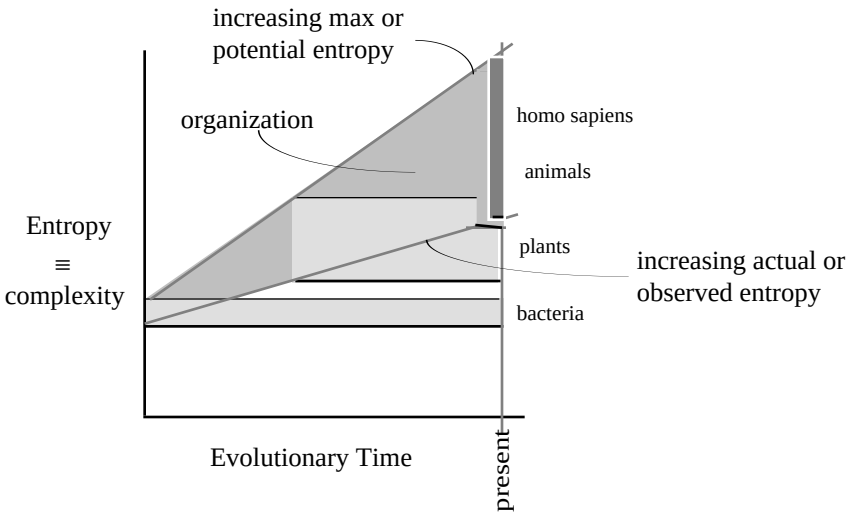


Figure 1.8 How increasing potential and actual entropy generate increasing organization (shaded) at the leading edge of evolution.

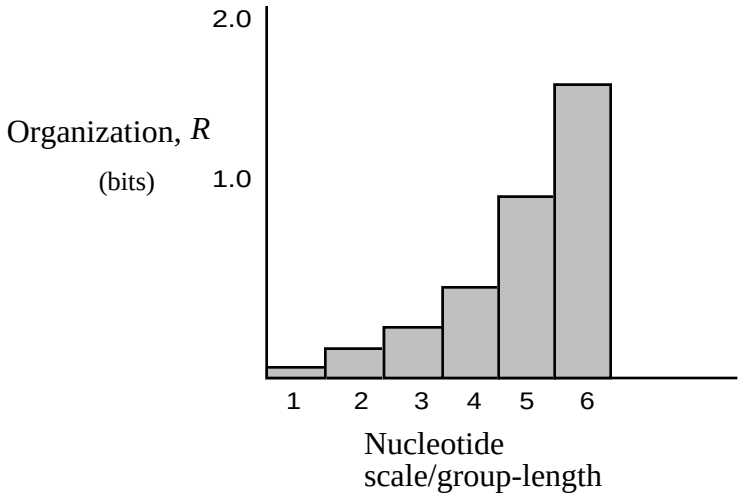


Figure 1.9 Increasing organization, R, with nucleotide group-length (from Brooks, Cumming, and LeBlond, 1988)

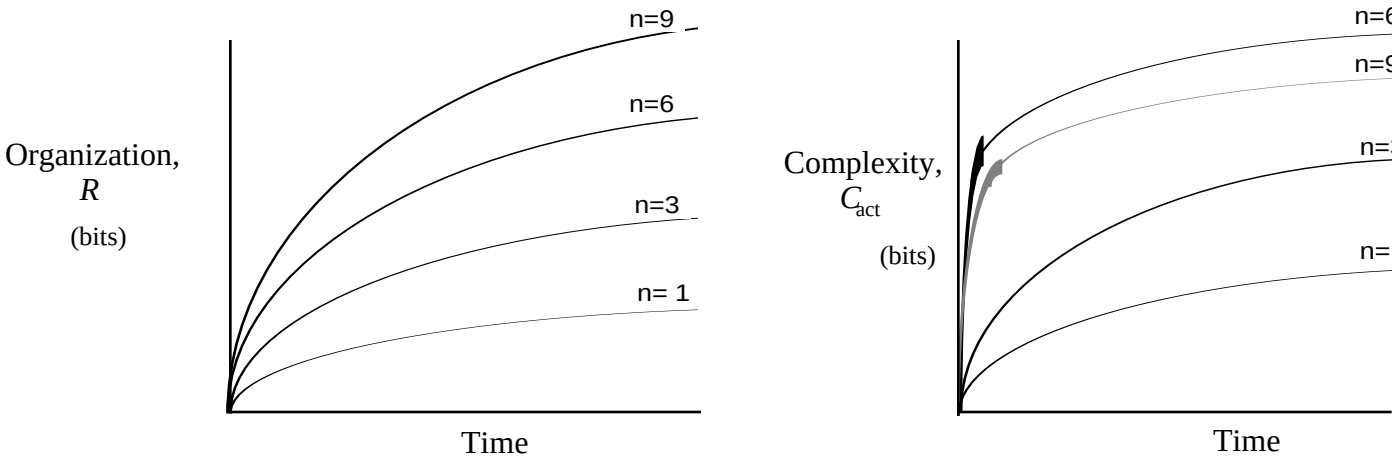


Figure 1.10 Increasing complexity and organization of model genes with "evoutionary" time (n = gene group length) (from Brooks, Cumming and LeBlond, 1988)

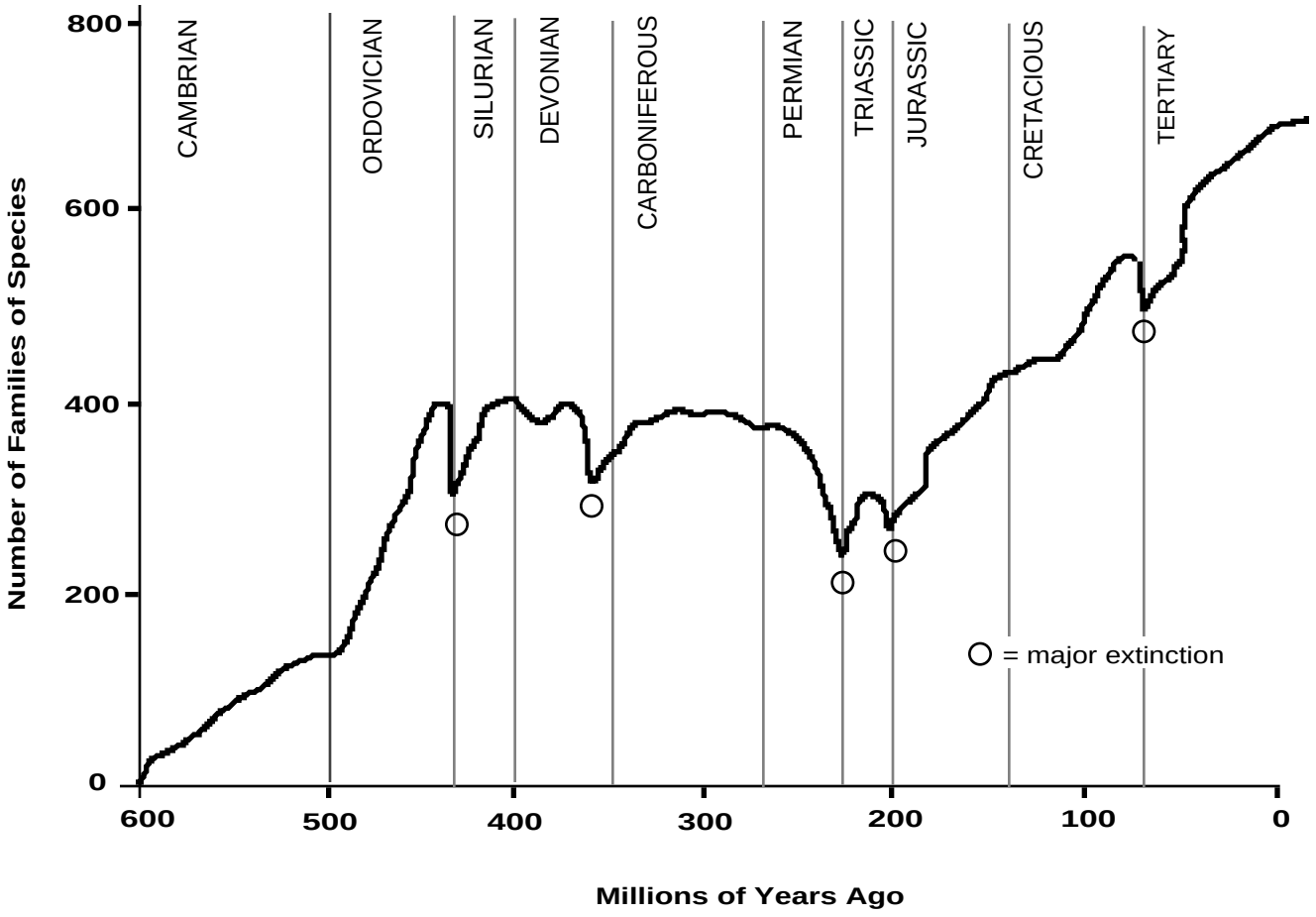


Figure 1.11 The growth in number of species over evolutionary time

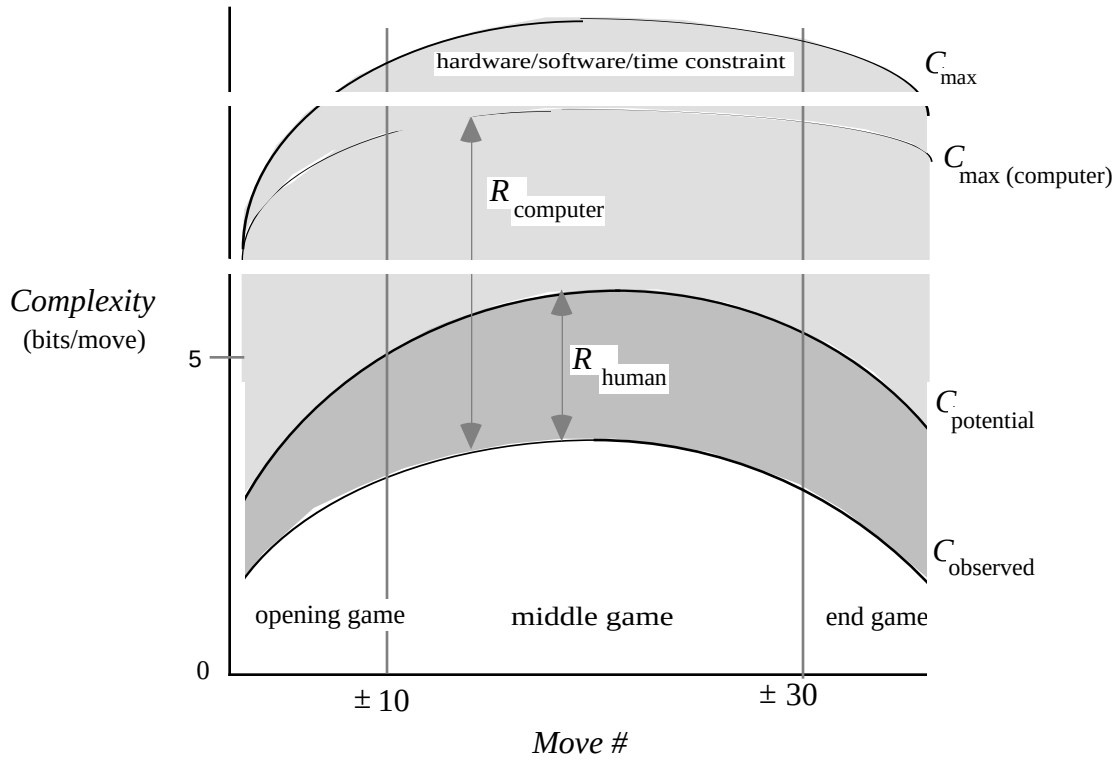


Figure 1.7 The changing complexity of potential (legal and seen) and observed (legal and seen and played) board positions over an average chess game.