EpiDoc 394

Some Uses of Zero Exponents

$$X^{0}_{A}$$

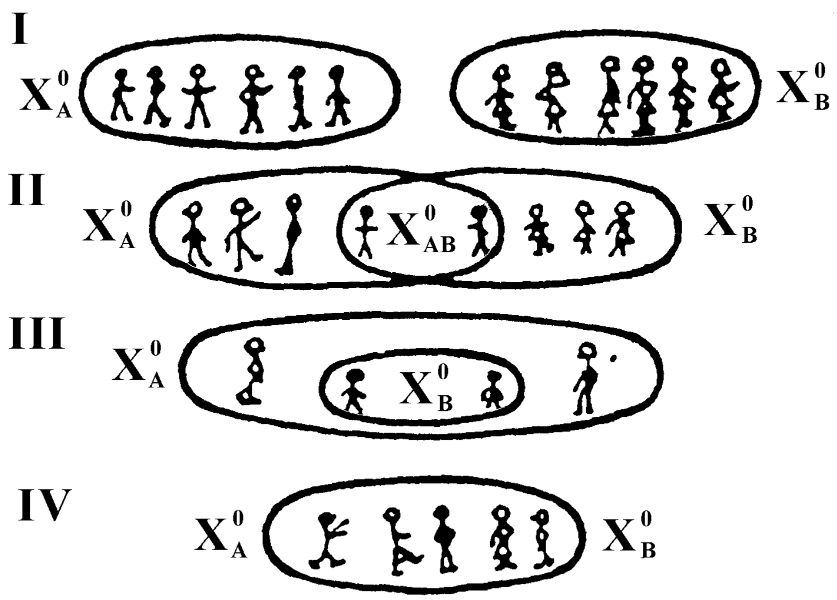
Naming Classes

Kant's Subcategories of Quality:
Affirmative $X^0 = 1$
Negative $X^{-\infty} = 0$
Infinite $X^{+\infty} = \infty$

${}_{B}^{A}X_{C}^{0}$ = the class “C” with a member “A” and a subclass “B”.
(Singular script in lower case; plural in upper case.)

X^0 = universal class
${}^0X^0$ = nul class, memberless
X^{0}_{-C} = complement of class C

RELATING CLASSES



In Folk words:	In Formulas
I Males or Females	$X^{0}_{A+B} = 0$
II Male Children	$X^{0}_{AB} \neq 0,A,B$
III If boys, then males	$X^{0}_{AB} = X^{0}_{B}$
IV Humans are people	$X^{0}_{AB} = X^{0}_{A} X^{0}_{B}$

Operating

Logical SUM = ${}^{0}X^{0}_{-c}$ -- disjoint case

Logical PRODUCT = ${}^{0}X^{0}_{-c}$ -- overlap proper case

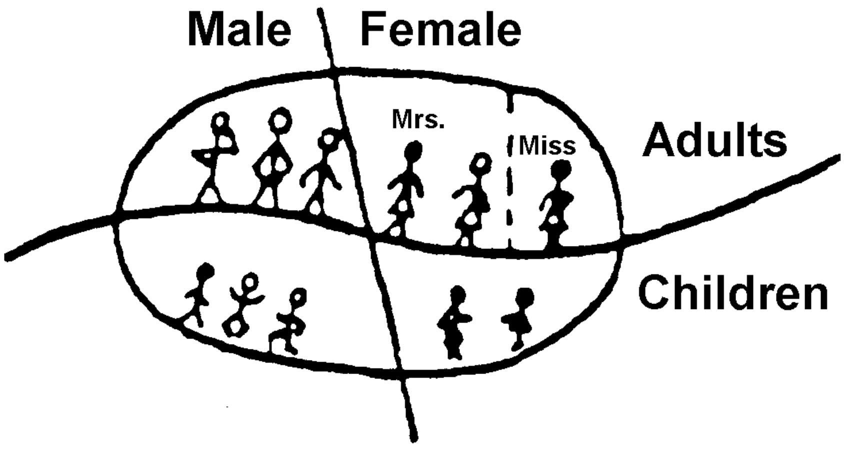
Logical INCLUSION = ${}^{0}X^{0}_{-c}$ -- part-whole case

Logical EQUALITY = ${}^{0}X^{0}_{-c}$ -- mutual inclusion case

Logical DENIAL = ${}^{0}X^{0}_{-c}$ -- i.e. no members

Identity elements are:
Digit zero for ±; as $x + 0 = x$
Exponent zero for x , as ÷ $xy^0 = x$

Classifying = Logical sums



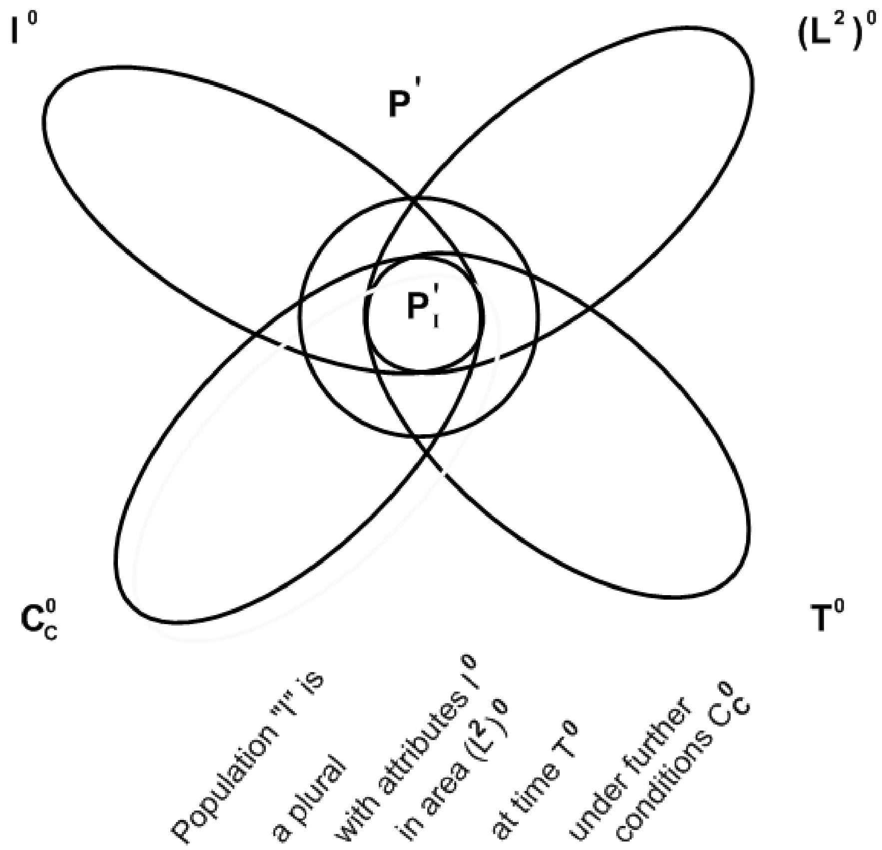
People named "A"

are a sum of

2 sex plurals sub-classified into
2 age plurals sub-classified into
marriage statuses

$$P^0_A = P^0_{s:a:m}$$

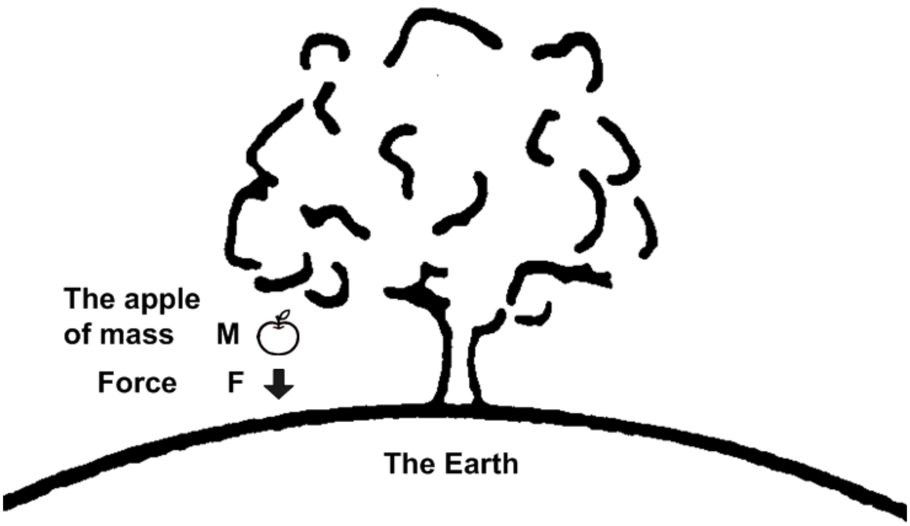
Qualifying = logical products



$$P'_I = P' I^0 (L^2)^0 T^0 C^0_C$$

Specifying Assumptions

In a physical formula



Force of gravity

equals a product of

the graviational constant

and the mass of the earth

at the earth's surface

in a vacuum

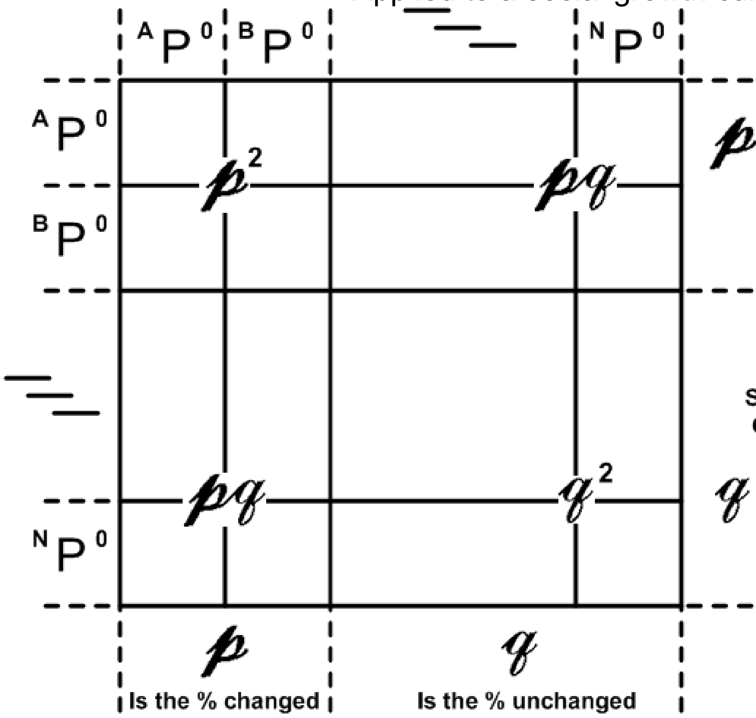
mass of apple

distance of fall

$$F = g\, M_1\, C_1^0\, C_2^0\, M_2 / L^2$$

Deriving a Law

Applied to a social growth curve

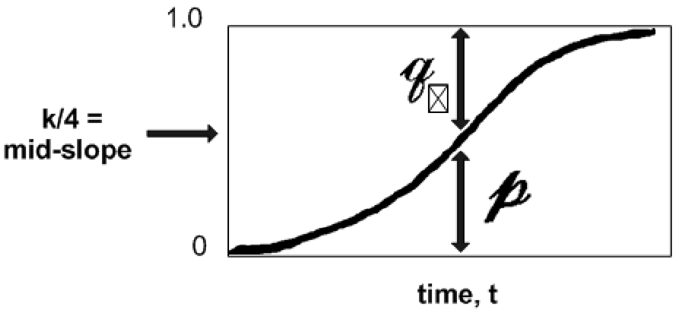


$$p + q = 1$$
$$\underline{p + q = 1}$$
$$p^2 + 2pq + q^2 = 1$$

Speed of Change $= \dfrac{dp}{dt} = kpq$

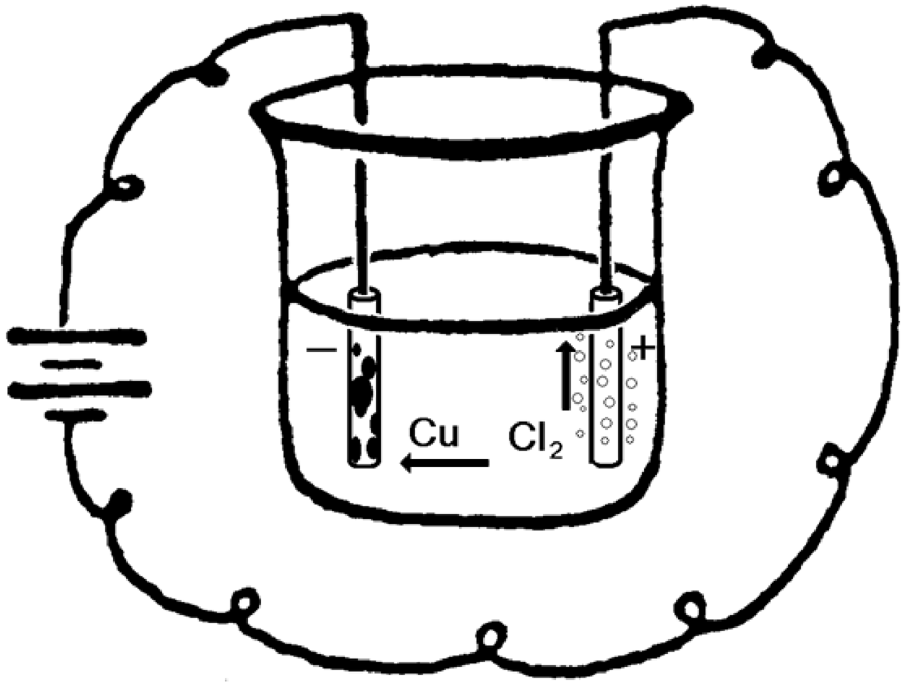
Cummulating as the logistic

$$p_{\boxtimes} = \frac{p_0}{p_0 + q_0\, e^{-kt}}$$



Specifying Conditions

in a chemical reaction



Copper chloride in solution with electricity yeilds copper in solid form plus chloride gas

$$CuCl_2\, F_2^0\, E \longrightarrow CuF_1^0 + Cl_2\, F_3^0$$