

## [1] Implication and Knowledge *a priori*

### Implication

- the necessary relation linking grounds to consequences
- the necessary relation of valid deduction
- knowable *a priori*
- only knowable *a priori*

### Knowledge *a priori* [KAP]

Plato + Aristotle	Meno + syllogism
Leibniz	Nothing can be red and green all over at the same time
Kant	$7 + 5 = 12$
Cournot	<i>a priori</i> probability is derived purely by deduction
Peirce	$A = B, B = C$ therefore $A = C$
Wittgenstein	1921: "All deductions are made <i>a priori</i> "
Gödel	1995: "Mathematics, including logic, is an <i>a priori</i> science"

## [2] KAP in Epistemology

Leibniz 1705: KAP introduced in experience without demonstration  $\neq$  KAP

"The senses are not sufficient to establish the universal necessity of a truth whose negation implies contradiction. Reason....is the cause not only of our judgment, but even of the truth itself. This is called reason *a priori*"

Kant 1787

K1 All knowledge has its debut in experience, but not its constituting demonstration

K2 Knowledge independent of experience is *a priori* knowledge = KAP

K3 Necessity and strict universality are "sure criteria" of KAP

K4 All knowledge of necessary propositions is *a priori*

K5 All propositions known *a priori* are necessary

K6 All knowledge of analytic propositions is *a priori* (cf. Frege + Russell?)

K7 Some synthetic propositions are known *a priori* (cf. Piaget 2006 n25 + Husserl?)

Kant 1786 psychology is neither a science, nor even an experimental doctrine

Kant 1800 KAP is recognized "in the necessary use of the understanding which, without any psychology, a person finds in him- or herself".

Frege 1884: laws of number are analytic judgments, consequently *a priori*"

Wittgenstein 1915 "*a priori* world as problem round which everything I write"

1944: Distribution of prime numbers is *synthetic a priori*, or at least not discoverable by analysis of concept of a prime number

Casullo 2015: challenges to KAP defused: (i) incoherent, (ii) vacuous, (iii) insignificant, challenges left open: (iv) experientia distinction; (v) beliefs devoid of any justification

Mormann 2018: "Kant: role the *a priori* plays in constituting the objects of science"

### [3] KAP: introduced in child psychology, but absent from Data & Discussion

Alfred Binet 1905. Can I say: *I have three brothers, Paul, Ernest and myself.*

Karl Bühler 1918. Crisis in Psychology: subjectivity, meaningfulness, objectivity

Cyril Burt J. Exp. Ped, 1919. Test @ 8 years "Edith is fairer than Olive, but she is darker than Lily. Who is darker, Olive or Lily?"

Chomsky 1980: *a priori* reduced to innate, "*a priori* empirically irrelevant"

Johnson-Laird 2006: Kant passim in Index, KAP absent from text and Index

Lorenz 1996: Kant's KAP as biological organ, hooves, fins as causally adaptive

**Exceptions** Kitchener, 1986; Chapman, 1988; Müller, 2009; Moshman 2015.

### [4] Piaget's model: formation of deduction => KAP

1925 Kant's KAP impossible not to use, if re-habilitated as mental functioning

1929 ≠ conscious structure; ready-made innate mechanism; empirical association

1961 any normal person makes inferences that are not deductive implications

1972 Kant's KAP has separable attributes: antecedence & necessity. Necessity is neither antecedent at life's outset, nor fixed through life

1977 Necessities, whether local necessities or integrations in systems with increasing power, are always relative to reasons in operational constructions.

1937 Infancy: practical knowledge and deduction ≠ KAP deduction

1941a 1 = 1 recognized as KAP later in childhood, not in early childhood.

1941b childhood: number conservation "the result of an *a priori* deduction which makes it possible to dispense with observation"

1941c childhood: recognizing "conservation of weight as an *a priori* necessity".

1955 adolescence: KAP as outcome of structural integration (combinatorics, INRC)

1923 *Expérience Mentale & Prise de Conscience* in knowing reality

1950 Duhem's model of explanation combines empirical and formal sciences

1963 Reality has two lawful domains: causality & implication, facts & norms

1967 "Consciousness is the primary, unique reality for connecting meanings as designations or as signifying implications" (cf.1936: Intelligence as "a system of mutual implications and interconnected meanings").

1974 Default false assumption: "introspection as capability with unlimited power"

1976 Default false assumption: "necessity as an observable read-off from objects"

1976. Modal errors are rampant, especially but not exclusively in childhood, manifest as pseudo-necessities, and pseudo-contradictions

1977 "All necessity relies upon 'reasons' with deeper counterparts"

1980 The "search for reasons" by infant or savant has an Intrinsic dynamism  
If R1 is a reason for a truth, there is a reason R2 for R1, and so on  
The peculiarity of reasons "consists in reconstitutions" with the potential for implicatory explosions *ad infinitum*

Henriques 2004 on Piaget:

– "Reason is our capacity to reduce the knowable to reasons"

– "Knowledge in rational reconstruction is an *a priori* deduction."