

Classification, Natural Kinds and Human Kinds

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Overview

1. Recap on Kuhn & Relativism

2. Classification, Realism and Natural Kinds

3. The Construction of Human/Social Kinds

Paradigms & Scientific Progress

- Copernican revolution as an example of paradigm change
- In psychiatry: “Melancholia” and “depression” are not co-extensive (do not refer to the same things), which makes direct comparisons between their respective conceptions and theories difficult.
- Institutional view of art (G. Dickien)?
- Technological revolutions: overhaul of what is appreciated and ability to provide better solutions (not solve puzzles)?

Some (extreme) interpretations and consequences

Idea of scientific revolutions seems to lead to relativism: truth plays no role in scientific progress?

Strong program of science, postmodern approaches & science wars

Alan Shokal's case in 1996

Bruno Latour: Truth is socially constructed?

Paradigms in your field?

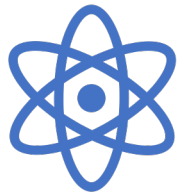
- Is there talk of paradigms in your field? How about in technology and arts?
- How is the term used? Does it match Kuhn's ideas?



REALISM and ANTI-REALISM



Most logical positivists were instrumentalists (antirealists): they believed that theories had meaning only as descriptions of observable things



Theory is only an instrument for organizing our observations, postulated *unobservables are not real* (e.g. atom, electron, subconsciousness)



In contrast, realists argue that, for example, parts of physics aim to close in on the truth about sub-atomic entities



Realists argue that unobservable objects of research and classification are real → *natural kinds that our scientific theories classify and explain*

Celestial
Emporium of
Benevolent
Knowledge
(Found by T.
Kuhn
according to J.
Borges)

- Animals are divided into
- *(a) belonging to the emperor, (b) embalmed, (c) tame, (d) suckling pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) quaking as though mad, (j) innumerable, (k) drawn with a very fine camel-hair brush, (l) et cetera, (m) having just broken the water pitcher, (n) that from a long way off look like flies.*
- *(Cf. "Women, Fire, and Dangerous Things: What Categories Reveal About the Mind", George Lakoff)*

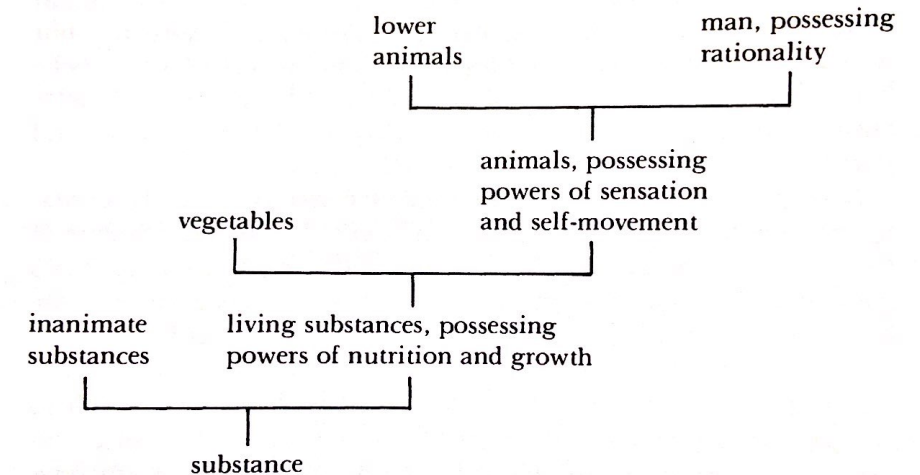
Scientific Realism and Natural Kinds

- Scientific terms or concepts ideally refer to natural groupings or kinds that reflect the natural world
- Plato: “carving the nature at its joints”
- Classificatory concepts enable cognitive capacities: we can gather knowledge of the world
 - Our cognition is not limitless, it does not allow knowing everything
- Natural kinds vs. arbitrary groupings (things on my left side) or social constructs (Money? Race? Gender?)
- Natural kinds support inductions and generalizations!

Aristotle

- "Scientific definition of a *species* is by *genus* and *difference*, and so the *definition of the essence* of man is 'rational animal'. Rationality, the difference, is "the principle thing in a man's nature," and the properties flow from the difference "as a natural emanation". Accidents are attributes that are not thus connected with the essence: the substance can in principle be without them even when it never is in fact, as crows are never without blackness." (Ayers 1981)

Porphyrian tree



³ I quote from T. Spencer: *The Art of Logic* (London, 1628; Scolar Press facsimile, Menston, 1970), ch. xi, pp. 59f.

CAROLINÆ REGNUM ANIMALE.

I. QUADRUPEDIA.

Corpus quadrupedum. Pedes quatuor. Femina vivipara. Lachryza.

Homo.	Noctæ in ignem.	Europa, Africa, America, Asia, Oceania.
Simia.	Autentica. Potentilla. Digni.	Asia, Africa, America, Europa, Oceania.
Bradypus.	Digni 3, vel 4.	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ursus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Leo.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Tigris.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Felis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Mustela.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Didelphis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lutra.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Odobanus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Phoca.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hyæna.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Canis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Melus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Talpa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Arcticanus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Vesperilio.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hyrix.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sciurus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Castor.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Mus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lepus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sorex.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Equus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hippopotamus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Elephas.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Camelus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cervus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Capra.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ovis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Bos.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.

II. AVES.

Corpus plumosum. Ala duæ. Pedes duo. Rostrum ossium. Femina ovipara.

Pithecus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Strix.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Falco.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Paradisæa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Coracias.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Corvus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cuculus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Picus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Certhia.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sitta.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Upupa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ipida.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Grus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ciconia.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ardea.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Platæa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Pelicanus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cygnus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Anas.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Mergus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Graculus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Colymbus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Larus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hæmatopus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Charadrius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Vanelus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Tringa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Numenius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Fulica.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sturnio.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Catartus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Oria.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Pavo.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Melægaris.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gallina.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Tetrao.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Columba.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Turdus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sturnus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Alauda.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Motacilla.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lufcinia.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Parus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hirundo.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.

III. AMPHIBIA.

Corpus nudum, vel squamosum. Dentes molares nulli: reliqui semper. Pinnæ nullæ.

Tortuosa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Rana.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lacerta.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Anguis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.

PARADOXA.

HYDRA corpore pulgureo, pedibus duobus, collis foetum, & totidem capitibus, alarum experte, asserunt Ham-burgi, futurum referens Hydræ Apocryphæ à S. JOHANNES CAP. XII. & XIII. describitur. Equæ tanquam veri animalis speciem plurimum præbuit, fed fælo. Natura filii fem per similia plura capitis in uno corpore nunquam produxit na-turæ. Fraudem & artificium, cum ipi vidimus, den-tes Ferræ-mustelini, ab Amphibiorum dentibus diversi, fa-cillime detexerunt.

RANA - PISCIS S. RANA IN PISCIBUS METAMORPHOSI valde paradoxa est. quum Natura metamorphosis unius in aliam diversæ Classis non admittit. Rana, et Amphibi-omnis, pulmonibus gaudens & ossibus spinosis. Pices fi-no si, loco pulmonum, branchiis insistantur. Ergo legi Nature contraria fore hæc mutatio. Si enim pifcis hæc in-fructus est branchiis, erit diversus à Rana & Amphibia. S. vero pulmones, erit Lacerta: nam toto caelo à Chondro-pygis & Pinguibus differt.

PASCALIANUS rostro vulnere inflans femori suo, ut em-sane sanguine scum pullorum levis, subleto ab Ilium tra-ditur. Anam fabulæ dicit fœcus sub gulo pendulus.

SATYRUS caudæ hirsuta, barbatus, humanum re-ferens corpus, genitalibus valde deditus, falacissimus Sicuti species est, si unquam aliquis visus fuit. Hæmionis quo que Cælestis, de quibus recentioris peregrinationis multa nar-rant, ejusdem generis funt.

BOROMETZ S. AGNUS SCYTHICUS plantis accensetur, & agno admittitur; cui caulis alterius plantæ tertia erum-pono umbilicum intrat; idemque sanguine præditus à feri-deronari temerè dicitur. Est autem artificiosè ex radicebus Filicinis Americanis compositus. Naturaliter autem est *Eu-lyria Ovis* allegoricè descriptus, qui omnia data habet arti-bus.

PHOENIX, Avis species, cujus unicum in mundo indivi-duum, & que decrepita ex ferri bulis, quod fidi ex ro-mantibus fructus, reperitur fabulo ferri, filicem fibi-tura prioris vite periodum. Est vero PALMA DACTYLIFERA. vid. *Ramp.*

BERNICIA S. ANSER SCOTICUS & CONCHA ANATIPER, à lignis præditis in mare abjectis natis à Veteribus creditur. Sed cum inpositis Lepus interrens fuit peninsularibus, & modo adherens, quæ vire hæc anser Bernicia inde oritur.

DRACO corpore anguino, duobus pedibus, duabus aliis Vespertilionis similes, est Lacerta alata, vel Ræja per atren-morose fœca, & belluosa.

AUTOMA MORITIS Horologii minimi fontem edens in-parietibus, est *Pedicularis palustris* dicitur, qui ligna perforat, eoque inhabitat.

IV. PISCES.

Corpus apodum, pinis veris instructum, nudum, vel squamosum.

Thrichechus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Catodon.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Monodon.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Balæna.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Delphinus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Raja.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Squalus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Acipenser.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Petromyzon.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lophius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cyclopterus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ostracion.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Balistes.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gasterosteus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Zeus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cottus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Trigla.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Trachinus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Perca.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sparus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Labrus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Mugil.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Scomber.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Xiphias.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gobius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gymnotus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Muraena.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Blennius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gadus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Pleuronectes.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ammodytes.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Coryphæna.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Echeneis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Efox.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Salmo.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Omerus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Coregonus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Clupea.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.

V. INSECTA.

Corpus cruda officæ cutis loco testum. Caput antennis instructum.

Blatta.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Dyriscus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Melœ.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Formica.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Motepella.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Mordella.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Curculio.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Buceros.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lucanus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Scarabeus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Dermestes.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Castida.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Chryfomela.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Coccionella.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gyrinus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Necydalis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Attalabus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cantharis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Carabus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cicindela.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lepura.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cerambyx.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Buprestis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Papilio.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Libellula.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ephemera.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hemerobius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Panorpha.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Raphidia.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Apis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Ichneumon.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Mufca.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Gryllus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lampyrus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Formica.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cimex.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Notonecta.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Nepa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Scorpio.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Pediculus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Pulex.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Monoculus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Acarus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.

VI. VERMES.

Corporis Mufculi ab una parte basi cuidam folliculo affixi.

Gordius.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Tænia.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lumbricus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Hirudo.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Limax.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cochlea.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Nautilus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Cypræa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Haliois.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Patella.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Dentalium.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Concha.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Lepus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Vermis.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Tethys.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Echinus.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Alterias.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Medufa.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Sopia.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.
Microcofms.	Digni 5. (A. M.)	Carolina, Florida, Guayana, Surinam, Guayana, Surinam.

Birth of the “natural kind”

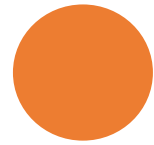
William Whewell (1794-1866): *Kinds* are the groups that we refer to with our general terms.

John Stuart Mill (1806-1873): *finite kinds* and *real kinds*

Charles Peirce (1839-1914): Laws of nature hold natural kinds together

Finite kinds: Have only one thing in common. E.g. all green things, all the things on my left side.

Real kinds: Enable inductive inferences due to shared similarities. E.g. Tigers, chemical elements, planets.



Essentialism and Naturalism about natural kinds

- *Essentialist* approach defines kinds as natural based on shared necessary and sufficient conditions that are determined by, for instance, microstructure, nature or intrinsic properties
- Essentialist usually argue that natural kinds are upheld by laws of nature (e.g. Peirce, Kripke 1980, Putnam 1975)
- *Naturalists* defend natural kinds from an epistemic point of view. They stress how natural kinds ground inductive inferences, explanations, and predictions (Mill 1843, Boyd 1989, Millikan 1999, Dupré 1993).

Questions

- What role does classification play in your field?
- Do you employ classifications in your research?
- Are there natural kinds in your discipline?



Classifying humans into groups

- Are classifications in the human sciences different? Are their targets different, humans and social objects?
- Social kinds:
 - Processes: revolutions, economic depressions, wars
 - Institutions: universities, countries, corporations
 - Roles and status: student, single
- Human kinds: gender, “race” and other identities
- Support *limited inductive inferences*



Dynamic Nominalism and Human Kinds (Ian Hacking 1936-2023)

- Classification as a process of co-fitting our concepts and the world
- "Perhaps the fundamental difference between the natural and social sciences is that the natural sciences investigate indifferent kinds, while the social sciences are on the whole concerned with interactive kinds." (Hacking 1997)
- But the social world does not offer natural restrictions for different ways of classifying and intervening
- Whereas quarks are stable objects of study, **human kinds** or "kinds of people" have a historical ontology contingent on their classifications
- Source of Instability: classification changes the very attributes used in the classification (Hacking 1993: 304)

WHAT ARE HUMAN KINDS? (Raul Hakli)

- Kinds of behavior, act or temperament are human kinds if we take them to characterize **kinds of people**
- studied in the human and social sciences
- ... about which we would like to have:
 - systematic, general, and accurate knowledge
 - classification that could be used to formulate general
 - truths about people
 - generalizations sufficiently strong that they seem like laws
 - laws that can be used to predict what people will do
 - or how they'll respond to interventions

What are Human Kinds? (Raul Hakli)

- Human kinds are **not** messy natural kinds
 - they will not become natural kinds with the advancement of our knowledge of nature
- Human kinds don't differ from natural kinds because they have to be understood hermeneutically rather than causally explained
- Nor because human kinds are social constructions whereas natural kinds are discovered
 - Facts are socially constructed and the kinds about which there are facts are also socially constructed
 - At the same time these kinds are **real**
 - Still there is an **important** difference between quarks and human kinds ...

WHAT'S SPECIAL ABOUT HUMAN KINDS? (Raul Hakli)

- Human kinds are laden with values. Yet, there need not be evaluation in the causal laws about human kinds
- Human kinds are kinds that people may want to be or not to be, because human kinds have intrinsic moral value
- So, classifying people has real effects on people, it changes them and the causal relations between kinds
- But once people of a kind are changed, scientists and experts have to rethink their original classifications

Examples

Homosexuality

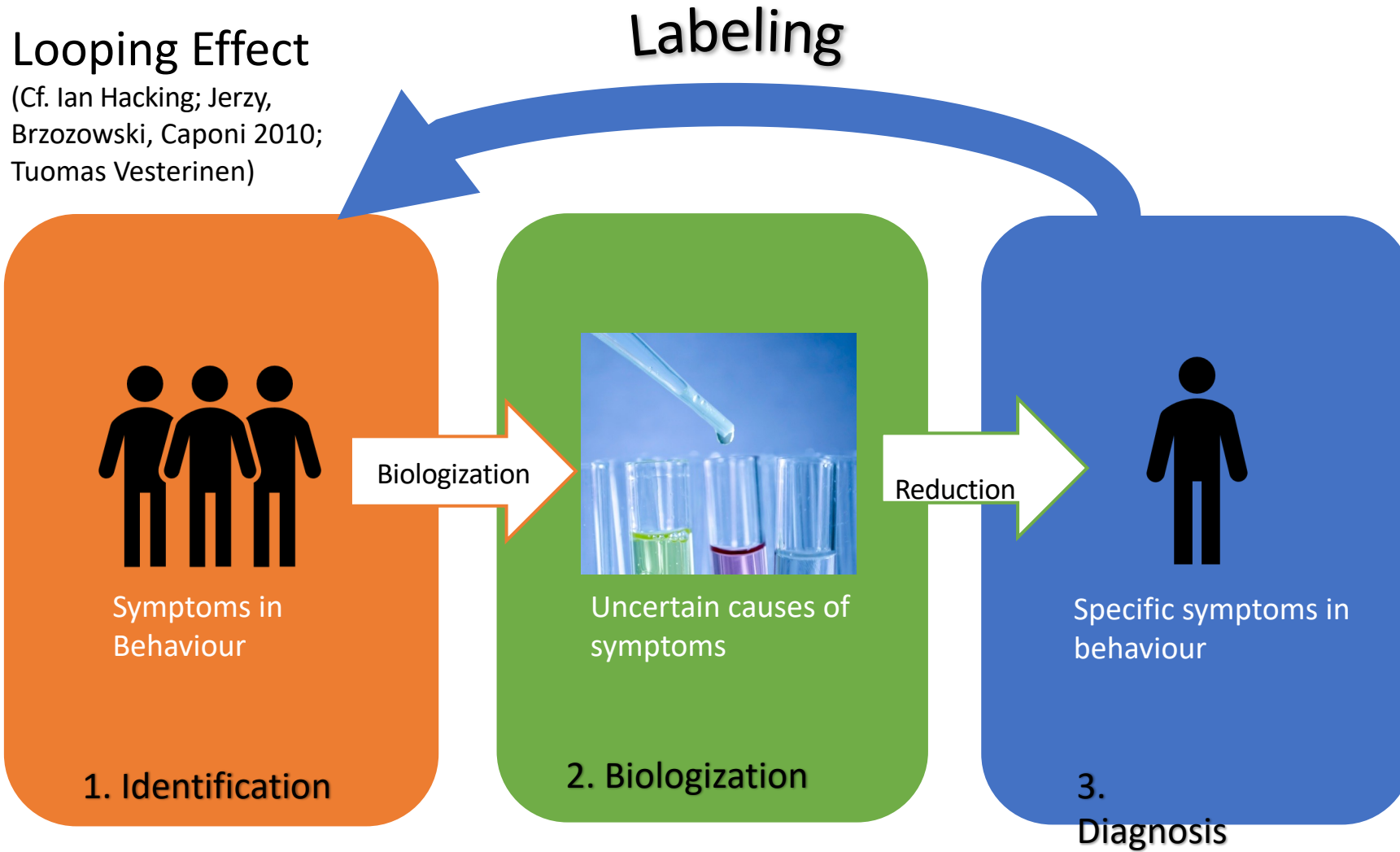
- Becomes a kind of person late in the 19th century when homosexual behavior became an object of investigation

Teen-age pregnancy

- Becomes a relevant kind only around the 1960s; now
- Cultural meaning of the term has changed: early parenting

Child abuse

- Becomes a kind around 1960s with battered baby syndrome, included incest and sexual abuse later on, and then cruel ritual cult





The looping effect

Classification "changes the space of possibilities for personhood"

The Loop: Classifications and the people being classified interact with one another

First stage: Classification, associated beliefs, and the generated actions influence the people being classified (and others around them)

Second stage: Classification may have to be amended to match the changes

The Effect: Destabilizes the kind by rendering it a "moving target"



Psychiatric kinds as examples

When symptoms appear somewhere they may need to be considered as symptoms of a disorders to cluster

May lack the required “conceptual space” for a suffering person: the conception of the normal way to be abnormal

Individual has to recognize and interpret her feelings and behaviour as kind-typical and learn the proper reaction

Interactive kind is not just a bundle of symptoms, but a kind of person

For example, when Asperger’s was included in 1994, it was thought to be really rare -> turned out to be common

Norm and Norma 1945

Culture influences mental problems

- E.g. Voice hallucination in the USA, Ghana and India; Depression in Japan
- Latah in South-East Asia
- Taijin Kyofusho: social phobia, ashamed for their bodily functions and appearance.
- Hikikomori: withdrawal from all social contacts
- Mild depression in Japan

Strange Tools (Alva Noë, 2015)

- Hacking (1999: 34) “Looping effects are everywhere. Think what the category of genius did to those Romantics who saw themselves as geniuses, and what their behavior in turn did to the category of genius itself. Think about the transformations effected by the notions of fat, overweight, anorexic.”
- Art and technology do not only model, and describe yourself, feelings etc, but they change the ways we are organized, provide novel resources for thinking and doing things differently. They alter the way we see ourselves and reorganize our practices.
- Artifact kinds are subject to looping?
- E.g. the development of music instruments interacted with people, concepts, culture, craft-techniques and materials.



Are there looping effects in your discipline?



What kinds of kinds do you study?



Can you think of a looping effect in science about in design, architecture?



“When I do my practice-led research in a field of craft, should I clarify to myself how my ontological thinking is linked to the idea of natural kinds? Glass-blowing process (social kind) and the material kind.”