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point of departure

with universal
algebra,
we are de facto
handling issues of
proportionateness
in terms of
literalness

Die Massstäblichkeit hat sich mit der Universal Algebra in eine Buchstäblichkeit gewandelt.

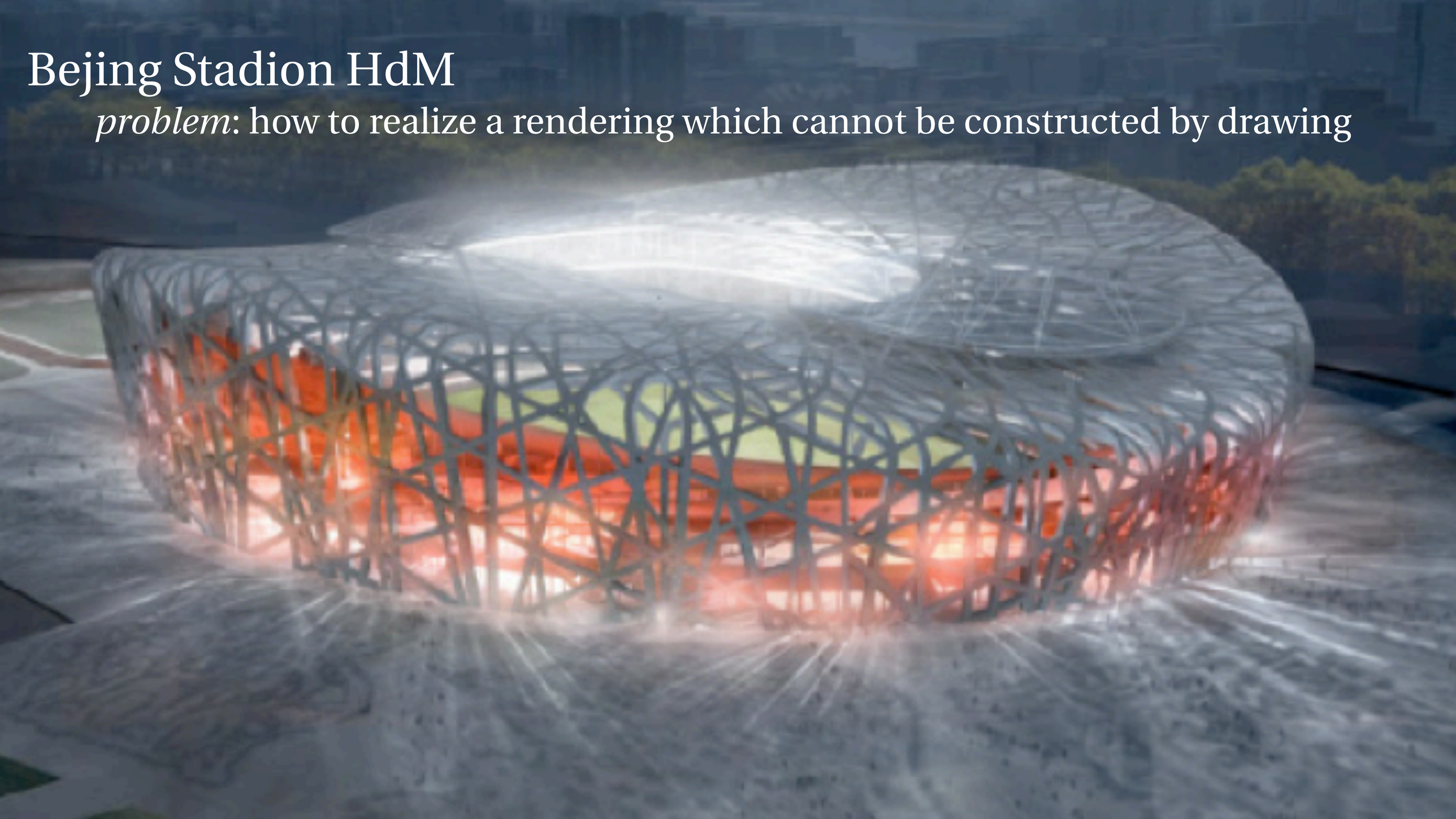
work at
CAAD ETHZ

elevating / raising / educating / breeding computational procedures to render constructible what cannot be drawn

(exploring the mightiness of algebraic geometry)

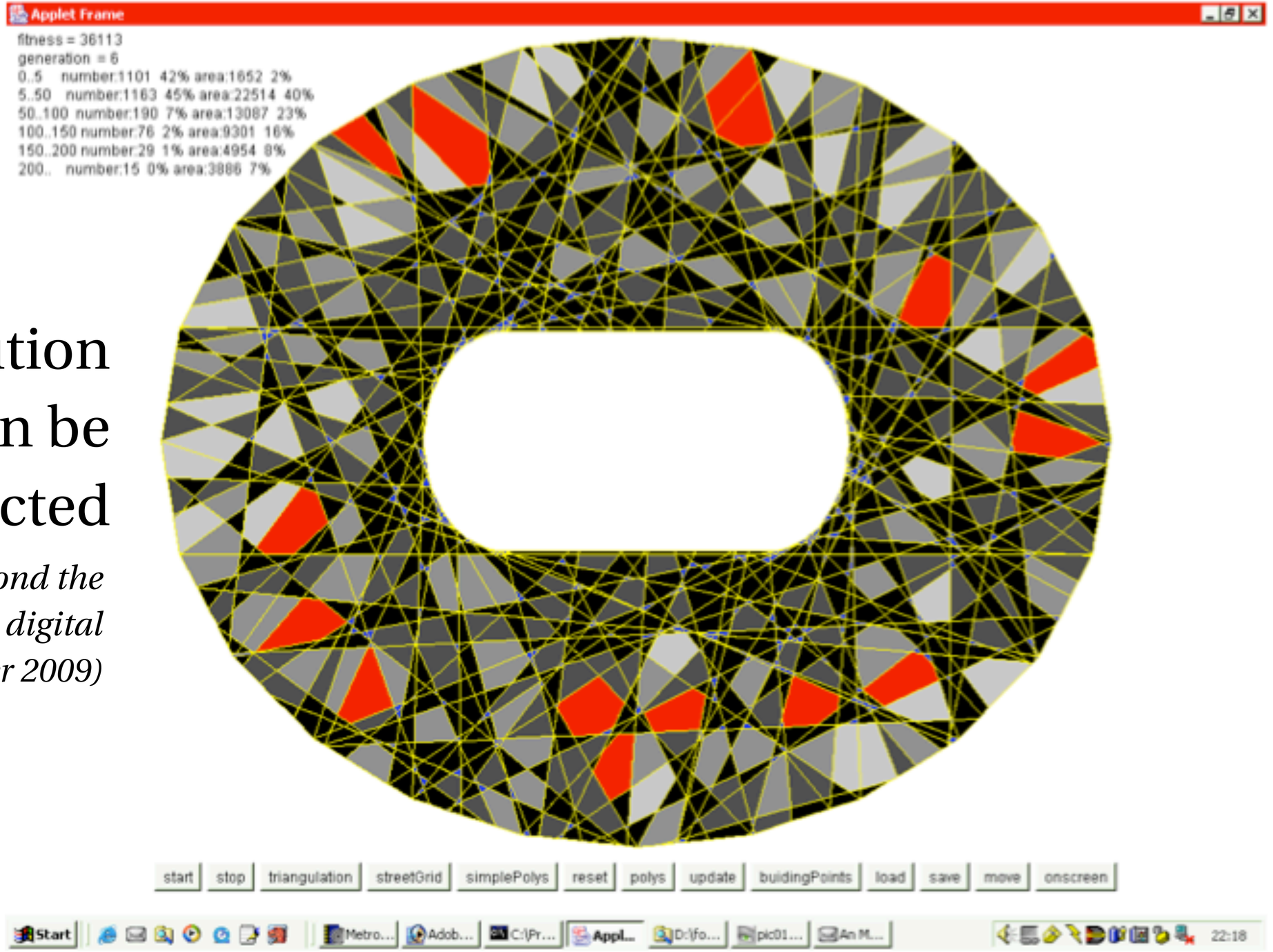
Bejing Stadion HdM

problem: how to realize a rendering which cannot be constructed by drawing



...raising a solution such that it can be constructed

ludger hovestadt: *Beyond the Grid. Applications of a digital architectonics (Birkhäuser 2009)*



Bejing Stadion HdM

compromise: realizing a rendering which can be constructed by drawing

more info: ludger hovestadt,
Beyond the Grid. Applications of a Digital Architectonics
(Birkhäuser 2009)

assumption

models maintain a relation with ideas, and seek to sustain and communicate their power

The *mightiness of models* addresses, within a representational framework, their *surplus* capacity

suggestions of how to abstract from the representational framework for thinking about models:

libidinal economies

surplus

– Bataille, *General Economy, accounting for excess and exhaustion*

– Lacan, *the dynasty of the Master Signifier*

– Baudrillard, *agony and hostility of the real*

– Deleuze/Guattari, *rhizomatics, the sexuality and heterogeneity of nature*

– Foucault, *Sexuality and Truth*

$\sqrt{1}$

roots, natural ones

$\sqrt{-1}$

roots, imaginary ones

THE WHOLE IS GREATER THAN ANY OF ITS PARTS!

»logical logics«

universal arithmetics

(sets are *descriptive*) classification

set theory measures infinties

THE WHOLE IS NO GREATER THAN SOME OF ITS PARTS!

»algebraic logics«

computable numbers (algebra-specific arithmetics)

categorization (collections are *articulatory*)

category theory articulates infinties such that they are rendered measurable

****

the ‚materiality' of the symbolical is very different:

sterile and *representative*

fertile and *engendering*

an exemplary dialogue on this:

(the materiality of the symbolical is very different)

sterile and *representative*

fertile and *engendering*

universal algebra

a : b = c : d

developing general procedures for *integrability*:

– how to „complete“ the square
– how to „continue“ a curve

vorwegnehmen was noch nicht gegeben ist

anticipating what is not yet given

Heidegger

mathematics – „giving to oneself what one already has“

M.Heidegger, *Die Frage nach dem Ding* (Vorlesungen über Kant)

das *Geviert*

a fourfold structure

—> his instruction: operate within the quadratic order of mightiness only

why ? why not manifold structures ?

Plato‘s *Timeaus*

terms

A (fire)
B (air)
C (water)
D (earth)

proportionality

as fire is to air so is air to water, and as air is to water so is water to earth.

ratios

A (fire) : B (air)
B (air) : C (water)
C (water) : D (earth)

assumption

models maintain a relation with ideas, and seek to sustain and communicate their power

Louis Hjelmslev: *Prolegomena to a theory of language*

glossematics!

an *economy of double articulation*
no representational framework

The *mightiness of models* addresses, if we consider their relation to ideas in terms of Hjelmslev‘s „purport“, the *integrity* of objects in terms of how it communicates the power of ideas.

http://en.wikipedia.org/wiki/Glossematics

The term was coined by Louis Hjelmslev and Hans Jørgen Uldall;[1] glosseme was a neologism deriving from the Greek word *glossa* (meaning "tongue"). The ultimate goal of the linguist who studies glossemes is the same as that of a physicist who studies atoms, to wit a more perfect understanding of the whole through a thorough study of the structure of the constituent parts. To the greatest extent possible, glossematics seeks to take a *tabula rasa* approach, constructing an internally consistent framework of axioms and principles with minimal reliance on external terms. It is an abstracting form of structuralism, concerned with how "functives" describe relationships among "terminals" rather than with words themselves. This system, constructed without recourse to any particular language or constructivist modality, seeks to establish a universal standard defining the necessary and sufficient conditions of language.

glossematics is *categorial*. It works within a modeling space that does not represent but articulate what can be understood, in formal and consistent terms, by language

.... how it is misunderstood because treated as if it were within a representational framework instead of *an economy of double articulation*!

what changes with an economical point of view on language ?

„As individual production, utterance can be defined, in relation to language, as a process of 'appropriation'. The speaker appropriates the formal apparatus of language and utters their position as speaker by means of specific signs, on the one hand, and by using secondary procedures, on the other. [...] *The individual act of appropriation of language places the speaker in their own speech*. This is a constituent fact of utterance. The presence of the speaker in their utterance means that each instance of discourse constitutes an internal point of reference.“

(Emile Benveniste, *Problems of General Linguistics,* 1966-74)


cf. Umberto Eco‘s book *Die Suche nach der vollkommenen Sprache (1994)*
apocalypse
revelation
purification
language before the fall

„In these days the angel of topology and the devil of abstract algebra fight for the soul of every individual is of mathematics.“

– *Herman Weyl*

„Cayley's numerous successes, quickly followed by those of the prolific Sylvester, unleashed one of *the most ruthless campaigns of totalitarian calculation in mathematical history*. [...] Such misdirected foresight was not peculiar to the algebra of quantics in mathematics since 1850. In the accompanying theory of groups, for example, especially permutation groups, there was a similar *panic*. Once the means for raising unlimited supplies of a certain crop are available, it would seem to be an excess of caution to keep on producing it till the storehouses burst, unless, of course, the crop is to be consumed by somebody. There have been but few consumers for the calculations mentioned, and none for any but the most easily digested. Nevertheless, the campaign of calculation for the sake, apparently, of mere calculation *did at least hint at undiscovered provinces in algebra, geometry, and analysis* that were to retain their freshness for decades after the modern higher algebra of the 1870′s had been relegated to the dustier classics."

(E.T.Bell, *The Development of Mathematics,* 1941, p. 429/30)

???

familiarizing ourselves with the *mightiness* of models

Universal Algebra has evolved around the developement of what is often called „auxiliary constructions“.

Algebra provides ways of managing the infinite, this is what we can read in the introductions to text books on the subject. Yet in practice, the common assumption today is to regard the status of algebra for that which can be learnt as *functional* and *instrumental*. In disagreement with that, I would like to make a case for regarding it, instead, as *constitutional*. What this shift of perspective results in is that algebraic enunciation of the universal means, to put it in an Aristotelian way, to *raise* the wealth of that in what the specific is „richer“ than its genus: namely differences.

Such constructions are capable of supporting proportional reasoning. An algebraic equation establishes how two things, A and B, may be *regarded* as equivalent. Over the millennia, algebra has developed ever more *general* forms and procedures, of how to formulate *general* equations, in ever higher levels of abstraction: that is, equations raised to their quadratic, cubic, quartic, quintic powers, and higher. This „generality“ that is established thereby, I would like to suggest, relates not to the *form* of a thing, but to *a thing's powers*. What changes over time follows a simple principle: the level of the abstractness in which an equation's terms can be handled *with general procedures* is proportional to the amount of ways in how such equivalence can be reasoned and maintained: the higher abstraction, the more ways of resolving a postulated equivalence.

a state of *outrage* *manifests* in terms of probability. We can *speak* *in terms of probability* (‚speaking' in the most general sense) if we consider every word as a model – *a virtual state of* its *energetization* *activity* – and characterize it in its situational context.

Probabilities thematize reasonability within a *set and limited Universe of Possibilities*, a universe that is constrained by the *alphabet* in whose components the *event horizon* is enumerated.

The reasonability thematized by *a logics of probabilities* is not absolute, but relative to how the Universe of Possibilities is set-up: it is relative to the materiality its *energetization* proper to this space's *literalness*.

models, outraged

probabilistics –
thinking within a space of *abundant* yet *insufficient reason*

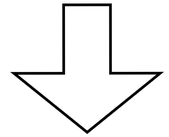
algebraic models that do not represent passively but actively, models that represent *universal subjects on a stage of global politics*. They have complex psychologies. We can address their complex psychology *in generic terms*, as *outrage*:

in the generic terms of outrage, the universal is subjective at the same time as it is objective.

a state of *outrage* is a state of energized *activation* in which is rooted all acts and activities that do not yet, not anymore, or might not ever, take place. In a state of activation, nothing is settled.

The more outrage from which a model can draw in what it allows to articulate, *the greater its mightiness* – because *the more potential considerateness* can be expressed in the ways of acting suggested by the model

models maintain a relation to ideas. Yet not one which *realizes* them, but one which *actualizes* their mightiness (their *real virtuality*)



how to characterize a *model / word* in its situational context such that it helps us to act less engaged and more considerately?

$$_{E}M = A / B$$

$_{E}M$ = [the mightiness of a model] (proportional to the differentiation in which subjectivity and objectivity can be articulated probabilistically within the model‘s Horizon of Events (Universe of Possibilities)

A = [the integrity of an object] (that does not represent a general class but that is universal subject)

B = [the outrage of models] (a model that has a psychological materiality that can be measured probabilistically, dependent upon how well we can articulate the constellation of terms it renders equivalent – that is, in which scale of mightiness / exponential elevation of the terms)