

# Social Calculus: A Blog in Progress

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## #1 Invitation to Social Calculus

This is an invitation to social calculus. If you don't mind, please start with the assumption of contradiction, not with the assumption of statement. You don't lose anything because a contradiction is a statement as well. Yet it combines positive and negative value.

For any social calculus this seems more than appropriate.

## #2 Everything is Otherwise.

We define any  $a$  as a contradiction to itself. We use George Spencer-Brown's notation in his calculus of indications (Laws of Form, London 1969, fifth ed. Luebeck 2008) to write:

$$a = a \quad \text{Eq. SC1}$$

The mark “ $\overline{\quad}$ ” is Spencer-Brown's cross, or mark of distinction.

Note that we do not assume anything outrageous. There is no thing, event, or relation, which could not turn out to be something else. There is no thing, event, or relation somebody else does not consider as being different. And there is no thing, event, or relation, which could not be different some other time.

So all three of Niklas Luhmann's dimensions of meaning (Social Systems, Stanford, Cal. 1995), the material, the social, and the temporal, are productive of contradiction.

### #3 Negation, Implication, and Empty Self-Reference

George Spencer-Brown, in his appendix on the laws of form interpreted for logic, proposes to write a cross,  $\overline{\quad}$ , for  $\sim a$ , that is, for the operation of negation, and  $a \overline{\quad} b$  for  $a \supset b$ , that is, for the operation of implication.

We propose to take these two proposals together and to assume for any **a**:

$$a = a \overline{\quad} b \quad \text{Eq. SC2}$$

Any **a** negates itself by implying **b**.

We take this formula to define the self-reference of **a** as being the reference to an empty **a** negating itself to imply **b**, which, as its implication, refers back to **a**.

We think that Martin Heidegger in *Sein und Zeit* (1926) thought of *Dasein* as exhibiting that kind of empty self-reference.

#### #3.1 *Creatio ex Nihilo?*

Aristotle warned against the assumption of emptiness. He called emptiness an empty thought, because a self-sustaining emptiness is impossible (Physics, 214a-216a). Hegel, Nietzsche, Heidegger, and others struggled with emptiness nevertheless.

How are we to regard the ancient saying of a *creatio ex nihilo* that at least is in accord with any Big Bang hypothesis in cosmology?

Following Herbert A. Simon (*The Sciences of the Artificial*, 1981, p. 221) we take emptiness to be a hypothesis, better, a fiction. He talked about the "empty world hypothesis" which makes the work of managers, designers, and others possible since it allows them to find a beginning at all. This work, however, comes with certain externalized costs we nowadays try to internalize.

The fiction of emptiness allows us to compute reference out of self-reference, and self-reference out of reference in assuming that one of these two references is empty, that is, yet to be determined. The idea of a *creatio ex nihilo* is fiction, yet without this fiction there is no playing with determinations whatsoever. That is why we better watch what kind of emptiness

is assumed at what place. We assume self-reference to refer to an empty self in order to be able to watch worlds emerge.

#### #4 Indeterminacy, or Why Mathematics?

Add George Spencer-Brown's mark of re-entry,  $\boxed{\phantom{a}}$ , to re-enter the formula of Eq. SC2 into itself:

$$a = a \boxed{b} \quad \text{Eq. SC3}$$

The negation and implication of **a** and **b** herewith applies to both terms, which become dependent upon one another to indicate what they distinguish.

We propose Eq. SC3 as the starting point of our social calculus.

We refer to mathematics as a way to prove the indeterminacy of any term thus able to play within social calculus.

##### #4.1 Indeterminacy at Work

There are three ways important for us to determine how the indeterminacy of the form in Eq. SC3 actually is put to work.

The first one is reference versus self-reference, drawing on Martin Heidegger and Niklas Luhmann. The self-reference of **a** is assumed to be gained via a reference to **b**, which is implication and negation at the same time, thus supplementing **b** for the empty self of **a**.

The second one is positive versus negative language, drawing on Aristotle, Hegel, and Gotthard Günther. Any **a** positively is only **a** if it negates, and is negated by, **b**.

And the third one is redundancy versus variety, drawing on Claude E. Shannon and W. Ross Ashby. Here, **a** is redundantly only itself if it searches for, and keeps at bay, variety in **b**.

All of these three ways assume **a** and **b** to emerge actively from operations. They are variables to be performed if they are to assume values in the first place.

## #5 Coding

Social Calculus takes the form in Eq. SC3 as a way to code things, events, and relations, all three of them emerging recursively out the calculus producing them.

There are at least six ways to look at this code.

The first is evolution, considering **a** as variation, **b** as selection, and the unmarked state as retention.

The second is system, considering **a** as system, **b** as environment, and the unmarked state as boundary.

The third is person, considering **a** as behavior, **b** as situation, and the unmarked state as the individual.

The fourth is network, considering **a** as identity, **b** as control, and the unmarked state as a tie.

The fifth is media, considering **a** as thing, or form, **b** as medium, and the unmarked state as coupling.

And the sixth is agency, considering **a** an agent, **b** a principal, and the unmarked state as self-interest.

Thus we may draw on a rich tradition of varieties of theories to look at how coding is done and what forms, out of the form, it produces and reproduces. Evolutionary theory (Charles Darwin, Donald T. Campbell), systems theory (Talcott Parsons, Niklas Luhmann), group dynamics and theory of attribution (Kurt Lewin, Fritz Heider), network theory (Harrison C. White), media theory (Fritz Heider, Marshall McLuhan), agency theory (Adam Smith, Michael C. Jensen) are examples which may be supplemented by many others.