The philosophy of dynamical algebra: day 1

I wish to state more precisely certain points of my course of day 1.

- My vocabulary does not try to introduce what I consider technical distinctions: I am using different words to express the same thing because sometimes this is useful to approach it.
  - I have used the expression of ideal object for a concept of which we might know many concrete instances, but for which in itself there is a problem of ~~effectiveness~~ effectiveness. I might have (or use) used other words: existence, constructiveness, access, clarity/obscurity, computability. Each of these words refers to something different, or to a different aspect of the problem. Some words seem to have the advantage of having an unambiguous meaning, but it is also good to use the more ambiguous ones because their ambiguity expresses by itself aspects of the problem.

- When I address mathematics, I think that there is one and only mathematics, the one at the highest level of discourse, sometimes called the metalevel, or metamathematical level. The specifity there is that (by definition) we are outside any kind of formal structure, axiomatic system, and that only our intimate conviction secures what is going on, together with our intersubjective sharing of this experience. We are often led to postulating certain things and more generally to put up formal structures, axiomatic systems, calculuses, and then our conviction is about them like about any mathematical object, and we also take up the burden of justifying these objects, i.e. of explaining their meaning.

Let us give again the ingredients of the classical proof that the module generated by integers a and b is principal and of its dynamical analysis.

Let d be the minimum of the set of the $ua+vb>0$. Then every element of this form is a multiple of d, for [illegible] the euclidean division of a non multiple of d by d gives a positive remainder $< d$, also of the form $ua+vb$.

Let d be a provisional minimum of the $ua+vb>0$, e.g. a. If d does not divide a and b, then the remainder of the euclidean division by d gives a better provisional minimum, affect it to d. Repeat this step. It can happen only a finite number of times because a decreasing sequence of integers stops. We obtain thus a common divisor of a and b of the form $ua+vb$, and therefore every element of this form is a multiple of d (and obviously vice versa).

Remarks: There are no new ingredients in the dynamical analysis, but they are reorganised. It is worthwhile to recognise which ingredient is new, what with respect to the presentation of algorithms today.

(A) Mathematics is common sense.
(B) Do not ask whether a statement is true until you know what it means.
(C) A proof is any completely convincing argument.
(D) Meaningful distinctions deserve to be maintained.

in Bishop, Schizophrenia in contemporary mathematics 1973