PHILOSOPHY AND FUN OF ALGEBRA

CHAPTER 4: PARTIAL SOLUTIONS AND THE PROVISONAL ELIMINATION OF ELEMENTS OF COMPLEXITY

Suppose that we never find out for certain whether x is unity or zero or something else, we then begin to experiment in a different direction. We try to find out which of the hypothetical values of x throw most light on other questions, and if we find that some particular value of x—for instance, unity—makes it easier than does any other value to understand things about y and z, we have to be very careful not to slip into asserting that x is unity. But the teacher would be quite right in saying to the class, "For the present we will leave alone thinking about what would happen if x were something different from unity, and attend only to such questions as can be solved on the supposition that x is unity." This is what is called in Algebra "provisional elimination of some elements of complexity."

It might happen that one of the older pupils, specially clever at mathematics, but not very well disciplined, should start some point connected with the supposition that x is something different than unity. It would be the teacher's business to remind her: "At present we are dealing with the supposition that x is unity. When we have exhausted that sub ject we will investigate your question. But, till then, please do not distract the attention of the class by talking about what is not the business on hand at present."

If the girl forgot, the teacher might say: "I should very much like you to try your own suggestion in private, but please do not talk about it in class till I give you leave."

If she forgot again, the teacher might say,—I think I should be inclined to say:—"If you cannot remember not to distract the class by talking about what is irrelevant to the business on hand, I shall have to request you to keep outside my class-room till you can."

In an orderly school the teachers have time to be polite, and it is their business to set the example of being so. In history, especially such history as that of half-civilised countries 3000 years ago, teachers were under too much strain to cultivate either a polite manner of saying things, or, what is of far more consequence, that genuine intellectual courtesy which is the absolutely necessary condition for the development of any really perfect mathematical system. The great Hebrew Algebra, therefore, never became quite perfect. It was only rough hewn, so to speak; and its manners and

customs were rough too. The teachers had ways of saying, “Hold your tongue, or else go out of my class-room,” which perhaps we should now call bigoted and brutal. But what I want you to notice is that “Hold your tongue, or get out of my class-room,” is not the same thing as “My hypothesis is right, and yours ought not to be tried anywhere.”

This latter is contrary to the essential basis of Algebra, viz., a recognition of one’s own ignorance.

The other, a rough way of saying “Get out of my class-room,” is only contrary to that fine intellectual courtesy which is essential to the perfection of mathematical method.