Reading notes for Boole’s Mathematical Analysis of Logic

Boole is famous for developing Boolean algebra, which was important to the development of the modern computer. Note that he begins by making a basic point about algebra, namely, that it is a symbolic system that describes the relationships between things. For instance, if I have the equation x + 2 = y, I know that for any pair of numbers (x, y), the number “x” will be 2 units less than “y.” The equation describes a relationship, as the word “equation,” (“this equates to that”) suggests. Algebraic notation can therefore be used to describe any number of things: e.g., s=2t, where “s” is the intelligence of students in our class and “t” the intelligence of the average undergraduate. Similarly, algebra is used to describe relationships in physics, as in F=ma (force equals mass times acceleration).

What Boole will argue is that symbolical algebra can be used to describe logical propositions, since those propositions typically define relationships between groups.

1. For Boole, language itself is founded on what basic mental act (pp. 4-5)? How might his focus on this act reflect the values of his culture?
2. At the bottom of p. 6 Boole speaks of the pleasure of witnessing the “universality of the dominion of law.” What do you make of the fact that he describes mathematical/logical formulae this way?
3. What does the footnote on page 7 suggest about how Boole conceives of art?
4. Boole argues that the use of his system will not weaken the reasoning faculties because it allows for a full understanding of its symbols, unlike ordinary language (see the 2nd paragraph of p. 10). For this reason, he argues that in his system logic rests “like Geometry upon axiomatic truths” (13). Remember that early in the century geometric figures were used to test the validity of algebraic equations; what effect would Boole’s

system have on the relative prestige of geometry and algebra?