Philosophy 103: Introduction to Logic
Logic Exercise: Diagramming, Level III

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Directions: Circle the argument indicators in the following passages and diagram the structure of the arguments in those passages using the numbered statements provided.

1. (1) Friendship is a serious affection; the most sublime of all affections, (2) because it is founded on principle, and cemented by time. (3) The very reverse may be said of love. (4) In a great degree, love and friendship cannot subsist in the same bosom; even when inspired by different objects they weaken or destroy each other, (5) and for the same object can only be felt in succession. (6) The vain fears and fond jealousies, the winds which fan the flame of love, when judiciously or artfully tempered, are both incompatible with the tender confidence and sincere respect of friendship.[1]

2. (1) The fact is that, as a rule, a specific protein is produced by a cell in very small quantities, sometimes a mere one or two molecules per cell. (2) As a result, the production of proteins needed for particular research becomes an arduous and costly undertaking. (3) One has to process dozens of kilograms, nay tons, of biomass to obtain milligrams of protein. (4) Despite such meager quantities, it is still not possible to ensure the necessary purity of the protein. (5) Hence, the costs of many protein preparations are exorbitant and their purity is substandard.[2]

3. (1) It is generally assumed that, given any event, there is some one phenomenon which is *the* cause of the event in question. This seems to be a mere mistake. (2) Cause, in the only sense in which it can be practically applied, means "nearly invariable antecedent." (3) We cannot in practice obtain an antecedent which is *quite* invariable, (4) for this would require us to take account of the whole universe, (5) since something not taken account of may prevent the expected effect.[3]

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[1] Mary Wollstonecraft, *Vindication of the Rights of Woman*, 1792, (New York: Dover, 1966), 74.

[2] Maxim D. Frank-Kamenetskii, *Unraveling DNA*, trans. Lev Liapin (New York: VCH Publishers, 1993), 61.

[3] Bertrand Russell, *The Analysis of Mind* (London: Routledge, 1989), 77.

4. (1) A ballerina puffs, blows, and sweats, as she goes through her necessary daily exercises before she can make her graceful flights in the evening's performance. (2) A singer has to spend his mornings bellowing, intoning though his nose, holding notes, developing his diaphragm and searching for new resonance in his head tones if, in the evening, he is to pour out his soul in song. (3) No artists are above keeping their physical apparatus in order by means of necessary technical exercises.[4]

5. (1) [I]n a Baroque church filled with Baroque music, the power of both light and sound would be vastly augmented. (2) Through simultaneous simulation of both visual and auditory senses, the faithful might be transported into a trancelike state that would indeed, in the words of Milton, "bring all Heaven before [their] eyes." (3) But this transport would always have to be effected by physical means, (4) for although in the Middle Ages men were able to find the vision within, in the Baroque period men demanded that the mystery be made visible to the outward sight. (5) Thus, to be credible, heaven must more and more visually resemble the domain of earth.[5]

6. (1)The dentist does not observe your ache, (2) but he can see the cavity which causes it, and (3) could guess that you are suffering even if you did not tell him. (4) This fact, however, cannot be used, as Watson would apparently wish, to extrude from science observations which are private to one observer, (5) since it is by means of many such observations that correlations are established, *e.g.* between toothaches and cavities. (6) Privacy, therefore does not by itself make a datum unamenable to scientific treatment.[6]

7. (1) The only solid foundation for morality appears to be the character of the supreme Being; the harmony of which arises from a balance of attributes; (2) —and, to speak with reverence, one attribute seems to imply the necessity of another. (3) He must be just, (4) because He is wise, (5) He must be good, (6) because He is omnipotent. (7) For to exalt one attribute at the expense of another equally noble and necessary, bears the stamp of the warped reason of man—the homage of passion.[7]

8. (1) [O]il deposits have the characteristics that make a biological origin highly probable. (2) First, they are rich in anaerobic bacteria, particularly the by sulphate-reducing bacteria, and (2) they are associated with sulphur deposits which are known to have a biological origin. (3) Moreover, when scientists have succeeded in detecting oil-like compounds in microbial cultures, they have been formed in mixed populations that included sulphate-reducing bacteria. (4) Secondly, in crude oil one can detect compounds called porphyrins which are chemicals derived from the respiratory enzymes of living organisms

[4]Constantin Stanislavski, *An Actor Prepares* (New York: Theatre Arts, 1966), 149.

[5]Horst de la Croix and Richard G. Tansey, *Gardner's Art Through the Ages*, 6th ed., (New York: Harcourt Brace, 1975), 597.

[6]Bertrand Russell, *The Analysis of Mind* (London: Routledge, 1989), 97.

[7]Mary Wollstonecraft, *Vindication of the Rights of Woman*, 1792, (London: T. Fisher Unwin, 1891), 84.

and which are not known to occur away from living things. (5) Thirdly, certain of the hydrocarbons of petroleum are optically active, which means, in non-chemical terms, that their molecules have a special kind of configuration that is only known to result from the action of biological systems.[8]

9. (1) The king, Wycliffe argued, is the vicar of God and to resist him is wicked. (2) Even bishops derive their power from him, and (3) so far as this world is concerned, the royal power is of greater dignity than that of priests, (4) for a spiritual power requires neither earthly power not property. (5) Hence it is the right and the duty of the king to remedy abuses in the government of the church.[9]

10. (1) In the nineteenth century man's privileged status in nature had been questioned by the hypothesis that he had evolved from lower forms of life. (2) In the newly developed social sciences, biological concepts were adapted to explanations of human culture and of individual differences, and (3) the human individual came to be seen as a resultant of the interacting factors of heredity and environment. (4) Thus, life may be determined rather than free. (5) And man in the collective comes to be studied statistically, like the subatomic particles of physics.[10]

11. (1) People say that a dog "knows" its name (2) because it comes when it is called, and (3) that it "remembers" its master, (4) because it looks sad in his absence, but (5) wags its tail and barks when he returns.[11]

12. (1) It is worthy the observing, that there is no passion in the mind of man, so weak, but it mates, and masters, the fear of death; and (2) therefore, death is no such terrible enemy, when a man hath so many attendants about him, that can win the combat of him. (3) Revenge triumphs over death; (4) love slights it; (5) honor aspireth to it; (6) grief flieth to it; (7) fear preoccupateth it; (8) any we read, after Otho the emperor had slain himself, pity (which is the tenderest of affections) provoked many to die, out of mere compassion to their sovereign, and as the truest sort of followers.[12]

[8] John Postgate, 3rd ed. *Microbes and Man* (Cambridge: Cambridge University Press, 1992), 156-7.

[9] Adapted from George H. Sabine, *A History of Political Theory*, 3rd ed. (London: George G. Harrap, 1963), 315.

[10] Horst de la Croix and Richard G. Tansey, *Gardner's Art Through the Ages*, 6th ed., (New York: Harcourt Brace, 1975), 718.

[11] Bertrand Russell, *The Analysis of Mind*, Lecture I.

[12] Francis Bacon, *Essays*, "Of Death."