Harvard-MIT Division of Health Sciences and Technology
HST.750: Modeling Issues in Speech and Hearing, Spring 2006
Course Directors: Dr. Christopher Shera and Dr. Jennifer Melcher

Problem/Discussion Set for "Recapitulation"

1. **Projections.** Solve Levins and Lewontin's "exercise for the reader."

2. **Frameworks.** Levins and Lewontin argue that "scientists come to their work with a world view, a set of preconceptions that provides the framework for their analysis of the world." Do you agree or disagree? Explain.

3. **Cartesian vs Dialectical.** Levins and Lewontin contrast the "Cartesian" and "dialectical" modes of analysis.

    (a) In what ways do these modes of analysis differ?

    (b) Do you agree that the Cartesian mode has "dominated [y]our academic education and pervades our intellectual environment"? Why or why not? L&L provide a synopsis of "implications for research strategy and educational policy as well as methodological prescriptions." Do you agree or disagree with L&L's prescriptions?

    (c) Can you provide examples from hearing/speech research that support or contradict L&L's view? In your examples, do you see evidence for unexamined and unexpressed preconceptions that underlie the work, perhaps wearing the "disguise of common sense or scientific method"? How might the questions asked and/or the research approaches taken change (for better or worse) if the authors had incorporated elements of L&L's prescriptions.

    (d) L&L maintain that their prescriptions apply to educational programs, as well as research endeavors. How does the SHBT Program fare according to L&L's criteria? Do you have recommendations for change?

4. **Modeling in Your Work.** Briefly summarize your current [or a recent] research question. Describe your overall research approach. Does this approach include modeling either formally or informally? What role did modeling play in defining your original research question. What role does it play in interpreting your results, and in redesigning your course of action? If your work includes a formal model, is the model detailed, heuristic, analytic, computational, a forward model, an inverse model? Why? How are you trading off model simplicity vs. realism? If your work does not include a formal model now, how might it in the future? What research outcomes might direct you toward or away from developing a formal model?