

In the above “wholes” condition, the image shows a 2-D view of the icosahedron that has just enough transparency to show that tightly clustered spheres at its core. The glyph for the equivalent condition shows individual spheres relatively evenly scattered. The parts condition shows a 2-D view of the wire frame icosahedron with the spheres clearly attached to the vertices. Finally, the inexplicable condition is shown simply as a non-textured gray zone.

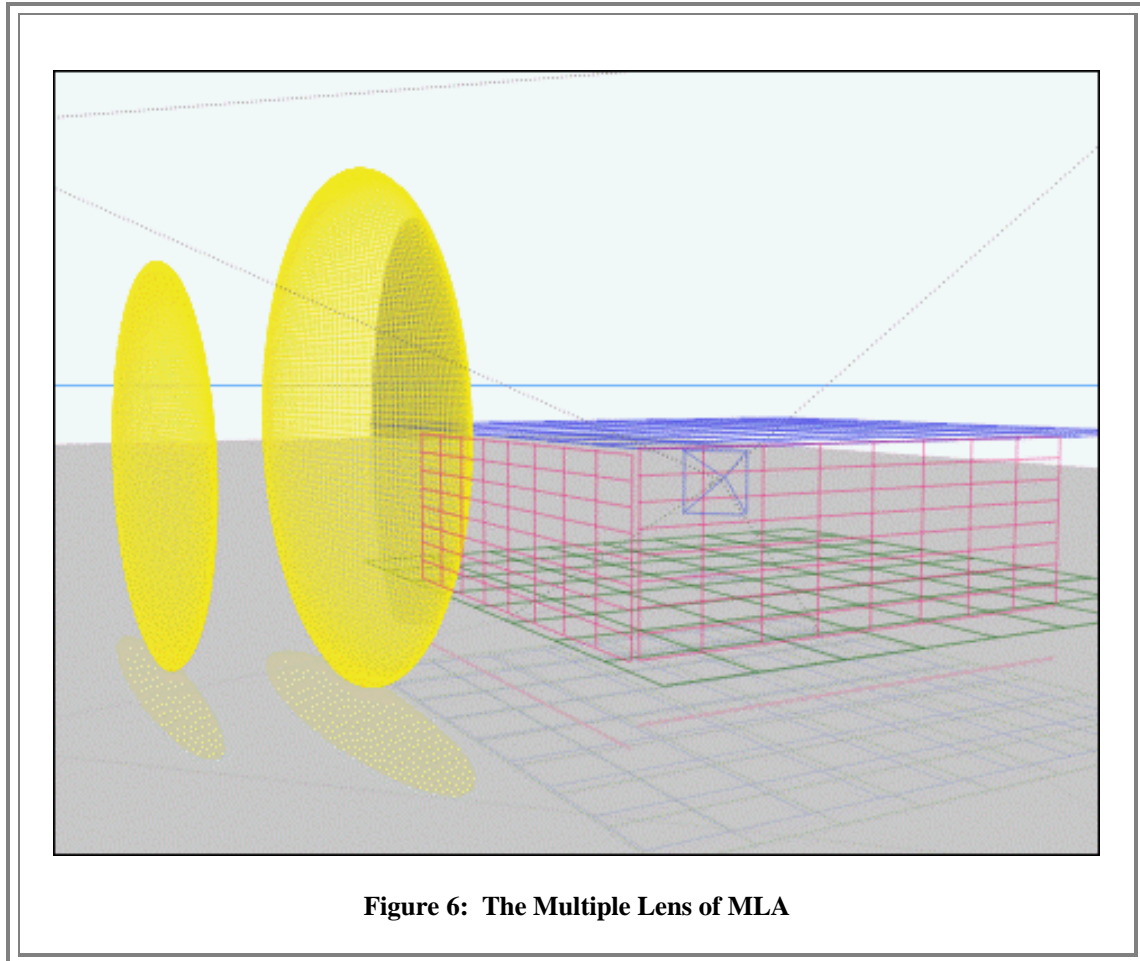
### The Second Inferential Component: MLA - Multiple Level Analysis

The SLA inference is without a doubt the best starting point for understanding the overall logic of WABA, but it is by no means the ending point. While a fair amount of space has been devoted to visualizing the SLA inference, it is indeed a necessary foundation for the remaining inferential components.

MLA, or Multiple Level Analysis, as the name suggests, is a direct extension of SLA to situations where there is more than one grouping entity to consider. (Remember that a grouping entity always requires at least one type of component entity in order to conduct an SLA.) Consider the simplest case allowable for an MLA: two nested grouping entities and a third component entity. This smallest entity has two continuous variables associated with it as attributes. Note that all three of which are hierarchically nested. In the example of the merit raise study, think of individual managers, supervisory work groups, and departments. In the research literature there have been a few examples of attempts to conduct MLAs (Markham & McKee, 1995).

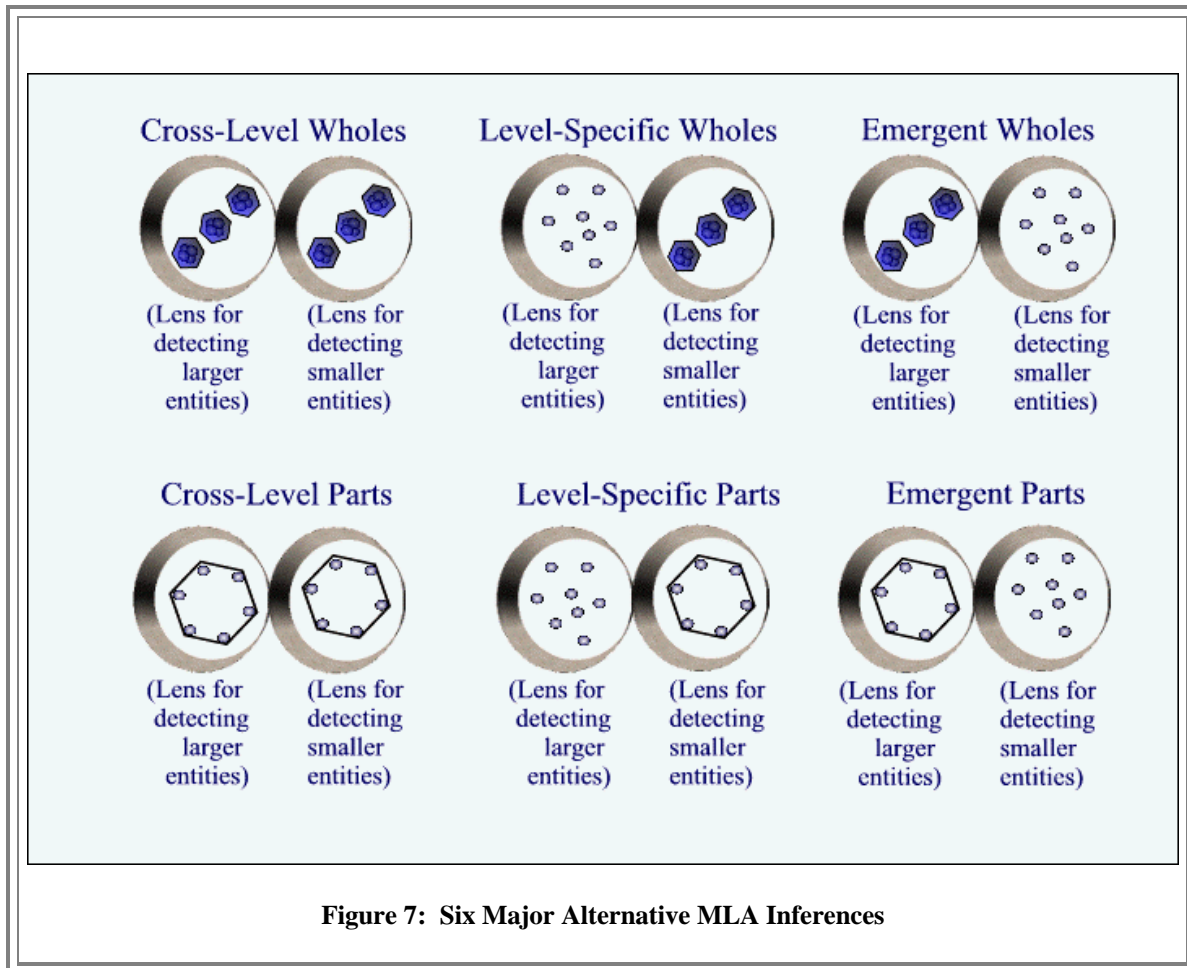
The central research question for an MLA is, “Can two simultaneous inferences be drawn about the texturing of grouping entities?” From a practical managerial viewpoint, this translates into the question, “Do I need to account for multiple types of groups in my organizational measurement systems?”

Several natural analogies exist for MLAs, with geology being an obvious choice for the MLA because of the image of different layers surrounding the Earth’s core. While it would be tempting to view geology as the natural analogy, it can be misleading. This type of geological analog reinforces the view of organizations as hierarchical levels that can be plumbed along a vertical dimension. This is certainly an interesting and widespread view, but it can be misleading from a WABA perspective. When a WABA study is conducted, especially those utilizing the entire population of an organization, a test for groups or dyads is not conditioned by hierarchical level. (While such a test can be done later, it is not the initial analysis because it is not the most parsimonious model.) The initial study might, for example, look for dyadic effects. The key point here is that the effect is expected for all dyads, regardless of which organizational hierarchical level at which they might reside. At the same type, a study of work groups could be conducted, again, using all participants, not just the lowest layer of the pyramid. In other words, the yellow lenses in Figure 6 might better represent this the notion that the same subjects can be viewed using different instruments, each suited to detect a particular type of effect.



**Figure 6: The Multiple Lens of MLA**

In Figure 6, the same organizational research space has been graphed as in previous figures, only this time the YZ plane and the YX plan have had a grid superimposed on them to indicate that we really cannot see clearly into this space with the unaided eye, and we are, in fact, dependent upon our instruments. Therefore, we require a variety of lens just as in microbiology. Each lens allows us to potentially identify a different entity effect (or type of texture) represented by a whole or parts grouping effect. We need multiple lenses, just as a microscope has a variable lens length. This ensures that different types and sizes of entities, whether they are macrophages, bacterium or viruses, can be detected. Utilizing the analogy of multiple lenses, Figure 7 ties this discussion directly to the MLA inference process as described on page 46 of the *Theory Testing* text (Dansereau et al., 1984). The six major MLA inferences are illustrated below. (There are other MLA formulations, but for the sake of simplicity only these six are shown.)



Notice that for each pair of lens, a different joint MLA inference is possible based upon the simultaneous consideration of the two SLA inferences. Thus, there are two types of cross-level models. (In this context, this use of the term “cross-level”, means that the same finding holds across multiple levels.) There are two types of level-specific conclusions in which the group effect is found only at the lower<sup>3</sup> level. There are two types of emergent inferences in which either a whole group or group part effect can emerge at a higher level. For each pair of lenses, recall that the same organizational space is being viewed, not two different spaces.

<sup>3</sup> We can easily become victims of our nomenclature. “Lower” is really a misnomer; we should say, “nested” or “embedded”. By the same token, “higher” should be “larger” or “inclusive”. Nevertheless, common practice will prevail, but we should not become confused with the everyday use of hierarchical levels.