For example, the most relevant anchor GB can think of in the Making Mayonnaise scenario is the jar of mayonnaise that he has probably taken out of the refrigerator countless times. Like GB, CN doesn't know the ingredients of mayonnaise or how to make it, and the most relevant anchor that came to her mind was "cookbook." Even when she is told the ingredients, however, her reaction is disbelief, most likely because she has no anchor that is specifically relevant to making mayonnaise. After all, how many ingredients might she have direct experience with that take on completely different perceptual characteristics when they are mixed together?

Cognitive structure and specific anchoring ideas within the cognitive structure, then, are prerequisites to meaningful learning. They describe the memory structure within which new knowledge will be integrated. But we have yet to see how the processes of learning occur, i.e., how the new knowledge is actually connected with and incorporated into the learner's existing knowledge.

Processes of Meaningful Learning

If memory is actually organized in the fashion that Ausubel proposed, then how is new information likely to be added to an existing structure? There are three possible ways: New information can be subordinate to (lower in the structure), superordinate to (higher in the structure), or coordinate with (at the same level in the structure) an existing idea. Consistent with each of these ways, Ausubel proposed a process of learning.

Derivative and Correlative Subsumption. The principal way of adding information to cognitive structure, in Ausubel's view, is to attach new ideas and details in a subordinate fashion to the anchoring ideas already present. This is the process Ausubel called subsumption (Ausubel, 1962, 1963a, 1968; Ausubel et al., 1978). That is, *new, incoming ideas are* ***subsumed*** *under more general and inclusive anchoring ideas already in memory.* Another way to think of subsumption is to consider the anchoring ideas as hooks that snag those incoming details and modifiers pertaining to them.

Because incoming details can relate to anchoring ideas in two possible ways (both still subordinate), subsumption is said to occur in two ways. **Derivative subsumption** refers to the *learning of new examples or cases that are illustrative of an established concept or previously learned proposition.* If we consider A in Figure 4.2 to be the anchoring idea in a learner's cognitive structure, with examples a1, a2, and a3 associated in a subordinate fashion, then new example a4 will be derivatively subsumed under A.

For example, if A is the general concept, dog, and collies, cocker spaniels, and poodles are known as examples, then it is relatively easy to learn the example, whippet, and subsume that information under the general con-