Sentences have hierarchical structure. How these hierarchical structures are mentally encoded and manipulated is less clear. This talk focuses on recent evidence that helps to provide answers to these questions. Starting from the assumption that linguistic structure building can be understood as real-time mental computation, the task of creating a sentence structure may be understood as a process of (i) incrementally assembling a structured memory representation, and (ii) rapidly accessing targeted pieces of that memory representation, and (iii) using the memory representation to guide the further elaboration of that representation. The real-time implementation of grammatical constraints has proven to be an effective tool for understanding these mechanisms, especially due to the profile of "selective fallibility". Some grammatical constraints are faithfully and reliably implemented in real time, others are not, giving rise to "grammatical illusions". This uneven profile provides important insights into the nature of the structured representations and the nature of the access mechanisms, and new discoveries are leading us to revise our views on these topics. In past work we argued that the profile of selective fallibility is governed by differences in (i) directionality of constraint application (forwards vs. backwards looking), and (ii) contrasting memory access mechanisms between different grammatical constraints. New evidence suggests that both of these assumptions are incorrect. We have uncovered ways to 'turn off' robust grammatical illusions, and we have uncovered ways to 'turn on' illusions in domains where we previously saw no illusions. And cases of robustness that we previously attributed to the forwards-looking nature of some constraints have now been extended to backwards-looking versions of the same constraints. Taken together, these lead to a new conception of how structured representations are mentally encoded and navigated. Evidence is drawn from domains such as bound variable anaphora, negative polarity, and crossover phenomena.