Five lessons about attention from studies of multiple object tracking

While early visual processing is massively parallel, visual cognition has very low processing capacity. Selective attention is a major determinant of which aspects of the visual scene become available to cognition. Multiple object tracking (MOT) is one task that researchers have used to study this. Over four decades of MOT research, we have learned several things about the relationship between perception and cognition. Some of these lessons emerged from the study of MOT, while others will be exemplified by particular studies of MOT. The five lessons are:

1. Selecting an object does not entail knowing anything about it apart from its location.
2. Object selection is limited by a specific capacity within each hemisphere of the brain.

3. A unitary (not hemisphere-specific) resource can also contribute to object selection, which can interfere with researcher efforts to study capacity limits.

4. Focused attention is often necessary for feature binding.

5. Object selection is constrained by spatial and temporal crowding, but only temporal crowding is markedly worsened as the number of objects to select increases.

Speculation about the mechanisms underlying these findings will be offered, including about the neural underpinnings.