Abstract: We examined the role of spatial frames of reference in memory. Participants first verified verbal descriptions of visual scenes and spatial relations among objects. The intrinsic and relative frames of reference (FoR) were used in the descriptions with varying degrees of frequency (availability) and veridicality (reliability). Descriptions in the two reference frames could either be equally distributed in terms of validity or were biased towards one of the two spatial frames. Participants’ performance on the memory task was sensitive to priming from the spatial FoRs and their information distribution characteristics. These findings provide evidence that spatial frames of reference can influence spatial memory and that this influence depends on the frequency of use of a given frame of reference and on the frequency with which it is associated with valid and reliable information.