

People gesture when they talk, and often gestures carry information about their thoughts. Beat gestures, however, which are simple flicks of the hand, are widely believed to carry no semantic information. Here we challenge this belief with a quantitative analysis of more than 5000 spontaneous co-speech gestures. Participants told stories suggesting literal or metaphorical motion in one of four directions: up, down, left, or right. They produced beats in the direction implied by the story, much more frequently than would be expected by chance, not only during literal spatial language (my rocket went higher), but also when participants used spatial metaphors for abstract motion (my grades went higher), and when they expressed the same abstract ideas without using any spatial language (my grades got better). Beats constituted the majority (76%) of the gestures that storytellers produced. Beat gestures are pervasive and meaningful, and reveal the spatial scaffolding of abstract thoughts.