The aim of this article is to show that synchronic cognitive constraints are responsible for some restrictions on human speech sound patterns; not all markedness asymmetries can be ascribed to mechanisms of diachronic change. We identify evidence for synchronic constraints in sound patterns that are desirable from a performance perspective yet are not attested. We also discuss recent experiments that provide evidence for psychologically and even neurophysiologically active restrictions; these patterns can be distinguished from statistical generalizations across the lexicon. We also argue that there is evidence that language learning is determined by innate predispositions. Finally, we examine the methodology behind choosing a synchronic or diachronic account for a particular sound pattern when both potentially offer an explanation.