In advancing the chemistry of low-valent phosphorus, one has to uncover new activation modes, new precursors or graft new substituents on to the phosphorus atom. In this presentation, we highlight our efforts at the above. Four research projects will be discussed. Firstly, we investigate the generation and trapping of a superelectrophilic phosphinidene. The trifluoromethylphosphinidene tungsten(0) complex reacts with alkynes and electron-rich alkenes. The instability of its adduct with trans-stilbene highlights the importance of backbonding from phosphorus to olefins in phosphirane complexes. The next project concerns the synthesis of 7-phosphanorbornadiene complexes from 7-phosphanorbornenes via treatment with lithium disopropylamide, followed by methylation with methyl triflate. These benzoannelated 7-phosphanorbornadiene tungsten(0) complexes are precursors to terminal phosphinidene complexes. Thereafter, we examine the unexpected generation of dianionic phosphides, resulting from an unexpected metalation, leading to a cleavage of the phosphorus bridgehead. Lastly, we describe the synthesis of secondary phosphirane complexes as a potential precursor to the parent phosphinidene complex and its unexpected isomerisation, generating terminal phosphinidene complexes with no by-products. DFT studies suggest this isomerisation takes place through a concerted hydrogen shift.