The 20-odd Anim languages of Southern New Guinea all have systems of grammatical gender consisting of four classes, typically distinguishing masculine, feminine and two inanimate genders. In this talk, I will present some of the most noteworthy features of the Anim gender systems, in particular some unexpected targets of agreement (such as adverbial expressions agreeing with the subject or object of the clause) and unexpected facts of exponence (such as systematic stem suppletion triggered by gender agreement). In a second part, I will present an account of the diachronic development of Anim gender based on on-going descriptive work from across the family. The diachronic account explains some of the typologically unusual quirks of Anim gender, and gives some interesting clues to how a complex gender system can arise "from scratch". One important lesson, I will argue, is that grammatical gender distinctions can arise without nominal classification (in any commonly understood sense of the word *classification*).