The discovery of the Icosahedral Phase in 1982 was one of the striking victories of transmission electron microscopy. Indeed, the first identification of dislocations and early stages of precipitation processes in the first days of electron microscopy were extremely important, and contributed a great deal to modern materials science, but the role of TEM has been mainly supportive, rather than ground breaking. Most of the crystalline defects, so elegantly studied by TEM, thanks to our understanding of contrast phenomena, were known before. The support of TEM, which produced dramatic images and diffraction patterns provided in most cases a final proof or rejection of existing theories and speculations. For the crystallographers' community, X-ray diffraction was the undisputed king, the reliable research tool in town. Enters the Icosahedral Phase, the first observed Quasi-Periodic crystal. Unexpected, not predicted, and flatly rejected by the paradigm: 'A crystal is ordered and periodic.' TEM was the only tool by which the I phase could have been discovered. The techniques needed for structural analysis of the I phase: contrast analysis, composition analysis and high-resolution images are all standard in modern transmission electron microscopy. X-ray diffraction could not provide any of the these, since the first produced I phase crystals were only a few microns in size, and the specimens contained several phases in addition to the I phase. The results provided in the first article on the I phase in 1984 were very convincing to the TEM community, but very controversial in the community of crystallographers. It was not until 1987 that large enough crystals were grown to enable single crystal x-ray diffraction, and the community of crystallographers was slowly convinced. Electron diffraction in the transmission electron microscope became a major tool for the discovery of new crystal structures. Most, if not all of the new quasi-periodic structures that were found since 1984 were discovered by electron diffraction in the TEM. In 1992 a committee of the International Union of Crystallographers changed the definition of a crystal to include Quasi-periodic crystals, but the new definition is more than that, for it defines 'Crystal', for the first time, through its reciprocal space.