an ambient temperature of 20°C. However, performance predictions based on STC are being continuously questioned, mainly because the resulting annual energy efficiencies are significantly lower than the power efficiencies defined, using STC. Certainly, PV users can be astonished on learning that the real efficiency of the PV module they have purchased, once installed at home, has only about 70% of the STC efficiency they have read in the manufacturer's information. This could lead to a feeling of having been deceived. This frustration can even increase in the case of fraud, that is, if the actual STC power performance of the delivered PV module is below the value declared by the module's manufacturer, which, unfortunately, has sometimes been the case [49, 50].

All together, these facts have stimulated several authors to propose other methods for PV module rating and energy performance estimation, more oriented to give buyers clear and more accurate information about the energy generation of PV modules (see Chapter 16 for a detailed description on rating module performance). This is still an open question, and it is difficult to predict the extent to which these new models would be incorporated in future PV engineering practices. Most of these methods require extending testing to other-than-STC, and rely on a relatively large number of parameters that should be empirically determined. Surely, the use of a large number of parameters would potentially allow for more accurate energy modelling. But it is not clear as to what extent the possible improvements would compensate for the associated increase of complexity derived from the experimental determination of such parameters. The proponents of new methods tend to argue that their procedures can be easily implemented. (Their papers used to include sentences like ... *the entire test procedure for outdoor measurements, including the set-up, takes approximately three hours* ... [51]). But, at the same time, the PV module manufacturers are very reluctant to incorporate troublesome novelties into their module characterisation procedures already established at factory PV. This dilemma is, in fact, easily understandable considering the inherent difficulties associated with the adoption of any innovation. This was magnificently explained by Maquiavelo in his famous work *The Prince*, written in 1513:(... *There is nothing more difficult to plan, more doubtful of success* ... *than the creation of a new order of things* ...).

Together, claims of low PV modules energy performance, and the flourishing of proposals for new rating methodologies have led, no doubt, to significant confusion in today's PV community, making risky this author's task of selecting a particular methodology for recommending to his PV colleagues. However, it is this author's opinion that, at least in the case of crystalline silicon, energy performance modelling based on only a few parameters obtained at STC, and always included in the manufacturer's data sheets, can lead to adequate predictions, providing that some judicious considerations are made. Obviously, precautions to assure that actual STC power of the purchased PV modules correspond with the manufacturer's declarations are a different matter [52].

It must be remembered that crystalline silicon solar cells remain the workhorse for PV power generation, despite significant advances in other PV devices. For example, c-Si technology increased its world market share [53], from 84.4% in 1999 to 86.4% in 2000. This predominance means that actual information concerning in-field c-Si PV modules performance is particularly consistent, which is not typically the case where other materials are concerned. Because of this, dealing with c-Si PV modules is, by far, the simplest and easiest case for PV designers. This is why, despite the above-mentioned confusion, the