The preceding chapters enunciate an approach, based on evolutionary programming, for 'ab initio' synthesis of different types of zoom lenses. It is to be noted that, in each case, multiple solutions can be obtained. However, in spite of quasi-global optimality of these solutions, not all of them can render useful solutions for a practical design problem.

No consideration for 'aperture stop' and 'field of view' was taken into consideration while working out the optimal solutions. The practical viability of each solution has to be determined after incorporating the size and location of the aperture stop and the actual field of view of the system in the analysis. The heights of the paraxial pupil ray (PPR) on each of the lens components will be decided by the field of view and the location of the aperture stop [vide section 3.6]. On the other hand, the heights of the paraxial marginal ray (PMR) on each of the lens components are determined by the requirement of relative aperture of $F_\#$ of the system. The feasibility of real component, say $i^{th}$ component of power $k_i$ with heights of PMR and PPR, $h_i$ and $\overline{h_i}$ respectively, needs to be looked into not only from the considerations of manufacturability, but also from the likelihood of occurrence of large aberrations. An analysis based on Delano diagram can be useful at this stage [250, 88]. Alternatively, rules of thumb based on an admissible lower bound on $D_\#$ of the component can be resorted to [251].

In pursuance of the prophylactic strategy in optical design, as laid out in Chapter 1, the next step calls for determination of central aberration requirements for each of the components so that the zoom system reasonably attain its target aberrations over the zooming range. Central aberrations of a lens component refer to aberrations of the component with stop on it. Suggestions for tackling the problem have been put forward by Yamaji [50], Jamieson [52] and Hopkins [172]. While Jamieson and Hopkins restricted their treatment by considering only primary or Seidel
aberrations, Yamaji incorporated also the secondary aberrations in his analysis. All of them took recourse to formulating the problem as a problem of nonlinear optimization of a multi-configuration optical imaging system. Use of evolutionary programming in the problem of correction of aberrations in structural design of zoom systems need to be explored in the near future.