policy, is not often likely to be resolved in the public interest. So it is clear that exclusive reliance on science policies formulated in isolation by individual agencies in no way guarantees a proper distribution of government science activities between the three main sectors of performance.

4. *The agencies' natural inclination to self-sufficiency also leads to undesirable duplication, both internationally and domestically.*

The extent of the duplication of research activities between nations is impossible to measure even approximately, though it can be said that imitation and unconscious duplication are widespread. In his article on "Measuring the Size of Science," Derek J. de Solla Price states that "science is a highly redundant process" and that "about a quarter of all discoveries are rediscoveries."[12] Research agencies often determine their science activities without taking proper account of what is going on in their field in other countries. They lack adequate systems of scientific and technical information —and if they were to develop their own services, this in itself would involve extensive, expensive, and undesirable duplication within the government administration. So government research agencies working in isolation can hardly be expected to apply the principle of the division of labour internationally. And yet it is much less risky and much more economical to import the results of research done abroad than to do research in-house.

Domestically the government agencies often duplicate each other's work in their attempts to be self-sufficient. It happens with the amassing of scientific and technical information, and it happens with the funding of academic research and training, when mission-oriented agencies develop their own support programs independently of the policies followed by the research councils. It would indeed be surprising to get a rational and balanced approach out of more than 20 unco-ordinated programs.

Dr. Nelson is quite right when he says that many research objectives and instruments "are relatively independent of each other". But it is equally true that many are relatively interdependent. Dr. Harvey Brooks points this out clearly:

> It is much less possible today than it was thirty years ago to associate specific areas of knowledge with specific federal missions. Individual agencies can no longer afford to be intellectually self-sufficient, either in the sense of dependence on other agencies or in the sense of dependence on non-government science and technology. Although today is popularly thought of, with some justification, as an age of increasing specialization, it is, paradoxically, also a day of disappearing barriers between scientific disciplines. . . .
> Agency missions depend on so many parts of science that no agency can