

THE RUPTURES AND SYNTHESIS IN GENETICS AFTER WW2 AND THE GENETIC COMMUNITY IN ITALY

FANTINI B.

Institute for the History of Medicine and Health, Geneva Medical School

History of Genetics, Evolutionary Synthesis, Molecular Explanation

In the two decades after WW2 a complete theoretical and disciplinary reconfiguration of biology, and notably genetics, took place. Two symbolic dates mark the origins of these changes: 1947, with the Princeton conference on ‘Genetics, Palaeontology, and Evolution, the starting point of the “new evolutionary synthesis”, and 1953, the year of publication of the double helix model for DNA by Watson and Crick, the beginning of ‘molecular revolution’.

The modalities and the impact of that reconfiguration can be analysed at for different levels:

- 1. *Theoretical*, with the introduction of a new kind of scientific explanation, based on a new form of causality, the introduction of the ‘informational vocabulary’, the extensive of the concept of ‘genetic programme’, the synthesis between molecular and evolutionary explanations.
- 2. *Methodological and Instrumental*, the development of new forms of scientific inquiry on the fundamental properties of life (function, structure, evolution) and of new tools (isotopes, electronic microscopy, ultracentrifuge, etc.)
- 3. *Institutional and disciplinary*, with the establishment of new university chairs and departments, scientific societies, and research institutes.
- 4. *Practical*, thanks to the development of biotechnologies, and the introduction of new concepts and techniques in the biomedical field.

The process of definition of new disciplinary and institutional boundaries has been long and sometimes controversial, and has established new disciplinary fields, such as molecular evolution, developmental biology and evo-devo, molecular pathology, behavioural genetics, and the application of genetic-molecular concepts and techniques to the study of populations, languages, and cultures.

The contribution of Italian genetics to this disciplinary reconfiguration has been relevant, in a first phase thanks to the scientific activity of individual scientists belonging to a small international and interdisciplinary scientific community, and later with the creation of specific scientific institutions.