and Marcel-P. Schützenberger published *Théorie géométrique des polynômes Eulériens*, Springer-Verlag Lecture Notes in Mathematics, no. 138, 1970. There is considerable overlap between the contents of the Foata–Schützenberger lecture notes and these Foata lecture notes.

What is Foata's contribution to the development of the foundations of enumerative combinatorics? After developing the elementary properties of exponential generating functions and the theory of formal power series, Foata discusses nonabelian and abelian partitional compositions. (Foata and Schützenberger introduced the partitional composition notation in their 1970 lecture notes, cited above.) A classical example of such a composition is a permutation of an n-set expressed as the abelian partitional composition of disjoint cycles. Foata obtains many classical enumerative results from what he calls the fundamental transformation. This transformation is a bijection of the symmetric group S_n onto itself such that a permutation with k exceedances is mapped to a permutation with k descents.

What are some of the results that can be obtained from partitional compositions, the fundamental transformation, and exponential generating functions? Foata obtains generating functions for Eulerian polynomials and for Laguerre polynomials. He finds generating functions for permutations enumerated by the number of cycles and for permutations without fixed points. The fundamental transformation defined for permutations of an n-set is extended to all mappings of an n-set into itself. Finally, Foata obtains generating functions for acyclic functions enumerated by the number of fixed points, by the number of elements in each orbit, by height, and by the number of inversions.

Now, let us consider the chapter written by Bernard Kittel. He shows that six known probabilistic identities can be proven by an exponential generating function formula. It is exciting to see this interplay between these two areas of mathematics, probability and combinatorics. Kittel is applying combinatorial techniques to probability theory, in contrast to the usual application of probabilistic techniques to combinatorics.

Clearly, these lecture notes should be read by those studying the foundations of combinatorial enumeration. These notes seem too specialized to be of great interest to the mathematical community at large. This community needs a survey book which puts the various approaches to the foundations of enumeration in proper perspective. Such approaches include combinatorial mappings, combinatorial operators, generating functions, incidence algebras, and umbral (Blissard) calculus. At present such a book is not available.

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Theory of branching of solutions of non-linear equations, by M. M. Vainberg and V. A. Trenogin, Monographs and Textbooks on Pure and Applied Mathematics, Noordhoff International Publishing, Leyden, 1974, xxvi+485 pp.