Editorial

Trends in Authorship

A major trend in the organization of science during the past two decades has been an evolution away from the individual investigator in favor of research teams. Accompanying this trend, scientific publications have become afflicted with an increasing tendency towards multiple authorship of papers. Almost any scientific journal will reveal this affliction. In the case of the journal Circulation, volumes 3 through 6, covering the years 1951 and 1952, included 348 papers, of which almost one third (106) had four or more authors. Of these, 35, or 10 per cent of the total, had five or more authors; five papers had seven or more authors. These percentages were intermediate to the findings in the American Journal of Physiology, volumes 167 to 171, which yielded 17 per cent of 397 papers having four or more authors, and the Journal of Clinical Investigation, volumes 29 to 30, which revealed 35 per cent of 337 papers with four or more authors. These figures should be contrasted with those for the first 10 volumes of the American Journal of Physiology (1898-1903) in which not a single paper having more than three authors could be found, and the first six volumes of the Journal of Clinical Investigation (1924-1929) in which only five per cent of the papers had four or more authors. Circulation Research is too much in its infancy to yield valid statistics, but it is of interest that 27 per cent of all manuscripts so far submitted to the editor have had four or more authors. Is this trend necessary or desirable?

At the risk of being presumptuous, we would define the requisites for authorship of a scientific paper as being "the contribution of creative thinking to the advancement of science." Creative thinking assumes (or at least should assume) its greatest importance in the design of an experiment. How many creative minds contribute to the design of the usual experiment? No data are available and generalizations are hazardous, but it seems a reasonable guess that a distinct majority of experimental designs are the fruit of a single creative mind. There are certainly some instances where two or three individuals, who have worked as colleagues for a significant length of time, can design experiments on the basis of discussions in which there was mutual participation. But how often does the basic design of an experiment represent the product of six to eight individuals thinking in unison?

Creative thinking may also be involved in the analysis of experimental results. Here there is definite justification for co-authorship, since the bias or blind-spots in the interpretation given data by an individual investigator may be avoided if two or three competent individuals sit down and debate the significance of their laboratory findings. On the other hand, there must be something drastically wrong with a set of data if their interpretation requires the mutual effort of six or eight investigators.

One source of multiple authorship doubtlessly stems from the growth of research teams, composed of several senior investigators representing different disciplines of science. When it comes to designating authorship, we see no reason why all members of the team should necessarily be included. Publications from such
a group are commonly divided into a series of papers focusing on various facets of the broad project, facets which often correspond with the center of interest and the discipline of one or two members of the team. Again the question of creative thinking should be raised, and care taken to see that creative thinking is not confused with expert consultation. Thus the roentgenologist who advises as to the suitable type of roentgenographic technic to employ, the pharmacologist who advises as to optimal dosage of a drug, the physiologist who recommends the proper recording method, the biochemist who details a routine extraction procedure, and the statistician who selects the proper tests for evaluating the significance of the data are acting as consultants. Their detailed technical recommendations, valuable though they may be, should not be confused with true creative thinking.

Another major source of multiple authorship resides in the practice of awarding authorship to junior members of the team who have served in a purely technical capacity. In the performance of such techics as Van Slyke analyses of blood gases, considerable skill is required for precise work, but this technical skill cannot be considered creative thinking. Neither are the activities of the staff member who supervises the Van Slyke technicians to be classified as being in the creative category which merits the awarding of authorship. In a few instances, we might concede some justification in awarding technical skill, as, for example, in the performance of skilled surgical procedures. To award a skilled surgeon with credit for creative endeavors, however, does not imply any concessions in regard to the assistant who provided retraction for him. The not uncommon practice of awarding authorship to technical assistants who possess advanced degrees, while withholding it from assistants lacking such degrees, may find a ready explanation in the indiscriminate listing of all names as authors.

Questions are often raised as to what position the director of a department should assume in connection with authorship of work done by his staff. There are those who espouse the philosophy that the director is ultimately responsible for all the work which comes out of his department, and that, therefore, he should formally assume credit as a co-author. It would seem to us that the creative yard-stick should still be applicable. In some instances, a staff member may serve as little more than a super-technician for his director. The director presents him with a detailed experimental design, analyzes the data as they accumulate, gives instructions that seem indicated for modifying procedures, and at the completion of the project writes up the paper. Here there can be no doubt as to the director's claim to authorship; it is rather the staff member's position as author which may be questioned. On the other hand, a director may be privileged to have experienced investigators associated with him, and the director's role may become that of mere approval of experimental approaches conceived by his associate, administering the department so that his associate's work may progress efficiently, and offering criticisms of a completed manuscript when it is presented to him. Not infrequently, a competent associate may start out with an experimental design outlined by his director, and
then, by astute observations of experimental results during the earlier phases of the work, the associate may redesign the experiments, so as to convert an insoluble problem into one which yields conclusive results. For the director to claim authorship in these latter situations appears to be little short of piracy. Apprehensions of directors that they might be forgotten in the acclaim awarded their associates is unfounded. Staff members rarely desire to lose, and even less rarely succeed in losing, the stamp of the director under whom they have worked.

The practical difficulties created by multiple authorship are obvious. Indexing and bibliographic services represent one of the most difficult problems in the structure of modern science. Whether one considers a large indexing agency or an individual investigator compiling a bibliography, multiple authorship necessitates an extravagant expenditure of valuable time and effort, which might otherwise have been devoted to more constructive endeavors.

Of even greater importance is the degrading effect that multiple authorship has upon the meaning of authorship. It would seem safe for the reader to assign a significant degree of credit to the author’s name that appears first. In some instances, the reader also may be able to identify the name of the senior investigator in the laboratory of origin, and rightly or wrongly, assign him some credit for the publication. What of the rest? Just what is the reader supposed to deduce from the fact that John Doe was the seventh out of eight authors? This deduction becomes all the more difficult if the reader discovers that the work reported could easily have been accomplished by two competent investigators in two or three months’ time.

Instead of being a means of giving credit for creative endeavors, it is evident that there is a tendency to degrade authorship into a form of menial patronage. Multiple authorship could be controlled if editors were to lay down rigid rules restricting the maximum number of authors which would be tolerated, except in unusual circumstances. Such a policy we would hesitate to endorse, first because it appears to usurp a prerogative of the authors, and second, because it would raise the delicate problem of ruling on the exceptions. To achieve a correction of this situation through voluntary restrictions by the authors themselves, it will be necessary for all research groups to subject their policies of authorship to a critical appraisal. A reversal of present trends will require the stringent elimination of the practice of carelessly offering co-authorship to one’s colleagues as a token for small services rendered in the conduct of research.

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