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FROM THE EDITOR

Our triennial conventions punctuate the passage of time for those of us to whom time measurement is a professional endeavor. At these meetings we discuss not only how to make these measurements more precise, but also how to raise the level of consumer confidence in our measurements. One of our continuing efforts as a community toward this objective is to obtain more quantitative assessments of the areas of uncertainty in converting the radiocarbon date produced by a laboratory to the time when an event of archaeological or geological interest took place.

Potential error falls into several different categories. Some sources of age error cannot usually be controlled directly by laboratory personnel: for example, determining whether the sample actually represents the timing of the geological or archaeological target event, or insuring the integrity of the sample during collection, handling, storage and transportation. Despite the laboratory's usual lack of direct control of these elements, we often act as consultants who recommend or specify pre-laboratory procedures. *Caveat emptor* is unusual in the radiocarbon community.

Another area of concern to both users and producers of radiocarbon data is the age coherency of the sample material. Are all parts of the sample coeval? This is a potential problem, for example, in the common case of charcoal. Troubling questions arise in both bulk charcoal and single chunks of charcoal. Are all the charcoal chunks the same age? Had some of the wood used in the fire lain around for several decades before burning? Attempting an answer by dating each of the chunks can be a very expensive endeavor. Both AMS and β-counting technologies may be accurate, but give different answers: one dates a single piece of charcoal, the other gives a weighted average of all charcoal fragments dated. The user usually decides which is preferable. Other sample material types have different potential problems, unrelated to the measurement quality or technology, that have become more apparent as the precision of radiocarbon analyses has improved: take for instance the oceanic reservoir effects on shells and on animals that consume marine organisms.

Most users of radiocarbon dates are aware of this type of problem, and are more concerned with the general credibility of the data produced by the laboratory. "User confidence" was the mantra heard in discussions at the Groningen meeting. Laboratories that have participated in past sample date intercomparisons know how they compare with the results of other labs, and users of dates have access to the collective performance. Laboratory personnel are able to use the results to identify problems in their own procedures, and correct them—or to smile and point out to users how well they performed.

Of course, these intercomparisons are not true blind tests, because their test samples are identified as such to the participating laboratories. A dilemma arises for both the supplier and the user of radiocarbon dates: blind tests provide information of value only to the user submitting the samples, and the laboratory often does not learn about them; on the other hand, organized tests provide information useful primarily to the laboratory. The user is rightfully suspicious that samples in the latter case may have received special treatment.

One possible solution, patterned after an independent consumers' advocacy organization in the United States, would for the quality assurance (QA) test samples to be "laundered" through normal users. The impact of this approach on radiocarbon dating laboratories could only be positive, as they would assume that any sample could be a QA sample, even from a long-term customer. The follow-up might be troublesome, however. The consumers' advocacy organization in the US publishes the results with manufacturers' names, sometimes leading to conflict or even litigation. For this and other practical reasons, I do not advocate blind tests, but rather semi-blind ones, internally generated by the laboratory director, where only the director knows which are the QA samples (Long 1990). In addition, I also support continued, organized intercomparisons, as have been so well carried out by Marian Scott, Doug Harkness and Gordon Cook.

The next radiocarbon intercomparison exercise is on the horizon. Marian Scott, Doug Harkness and Gordon Cook have recently been funded to produce and distribute material to 115 participating laboratories. The objectives of this new test series are stated and discussed in this issue (pp. 347–350). Results will be presented at the next conference in Jerusalem, in June 2000.

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For those of us who have tried to trace obscure and obsolete (and in one personal case, imaginary) laboratory designation codes, Kim T. Elliott has recently revised our laboratory list to include a historical record of all lab codes that we are aware of that were ever used. Please check the list, published toward the end of this issue of *RADIOCARBON*, for obscure or ephemeral labs that we may have missed, and forward any corrections or additions to us.

Austin Long

Reference

Long, A. 1990 A quality assurance protocol for radiocarbon dating laboratories. *Radiocarbon* 32(1): 109–112.