Walking up the tranquil Cross Creek gorge would hardly alert the uninitiated to the three-decade storm of controversy that has swirled over the archaeological findings made in this rather ordinary place 30 miles southwest of Pittsburgh. Situated here on the north side of Cross Creek in a sandstone bluff is a modest overhang, or rockshelter, known as Meadowcroft. It, too, seemed rather ordinary when a team of University of Pittsburgh archaeologists led by Dr. J.M. Adovasio began excavating there on June 15, 1973.

It wasn't long before their findings brought forth a challenge to the long-standing theory that America was first colonized around 13,500 calendar years ago by bands of Ice Age big-game hunters who migrated from northern Asia, across the Bering Land Bridge, down an ice-free corridor between the continental and mountain glaciers of Canada, and into the heartland of what is now the United States. Clovis is the name ascribed to the archaeological manifestation of these colonizers. Radiocarbon dates from hearths deep in Meadowcroft Rockshelter first published in 1975 suggest a human occupation of Meadowcroft perhaps as early as 16,000 or 17,000 calendar years ago, or 4,000 years older than conventional wisdom would assume possible. A cornerstone in the paradigm of American archaeology would crumble if this dating prevailed. Repudiation was swift.

Very little in archaeology is absolute and immune to challenge, especially so archaeological dating. Chronology is the backbone of archaeology, and its practitioners have innumerable dating techniques at their disposal, but because determining age is so crucial to archaeology and none of the techniques are absolutely incontrovertible, disagreements over dating are commonplace. Predictably, the greater the implications of any given date, the greater the potential for controversy and for acrimony.

Thirty plus years later, the storm is not much abated. The principal advocate for the site's great antiquity is J.M. Adovasio, now of Mercyhurst College, Erie, Pennsylvania. There he is currently professor of anthropology, archaeology, and geology; dean of the Zurn School of Natural Sciences and Mathematics; and director of the Mercyhurst Archaeological Institute. Detractors have been numerous and vocal; a few are still outspoken. Although much has been published, often in the form of piqued exchanges between proponents and opponents, there are still many details of the site and its investigations that have not been disseminated.

Dissension centers on the dating, the cultural status of some specimens reported as artifacts, the stratigraphic contexts of some of the materials, the environmental implications of the floral and faunal remains, and other matters. Adovasio's adamant, often colorful, and unyielding stance on Meadowcroft is responsible for some of the lightening in this storm. He readily admits this to be the case when, in a recent retrospective comment on his "smart-ass" response to influential critics of the early dates, he noted, "A colleague, upon reading it, told me that we would surely be vindicated, but it would take a long time and even longer now..."
The much needed and long awaited monographic treatment of the site's archaeology is not yet completed. Even though not fully reported, the Meadowcroft archaeological project has had an inordinate effect on the quest for the earliest Americans in large part per force of Adovasio's advocacy.

Today the site sits almost idle, though well protected, with public access to it maintained by the Meadowcroft Rockshelter and Museum of Rural Life in Avella. As shelters go, Meadowcroft is modest in size, being only about 49 feet (15 m) wide and 20 feet (6 m) deep with a ceiling height of 47 feet (13 m). It opens to the south, overlooking Cross Creek some 49 feet (15 m) below. It is an easy 8 mile (13 km) walk up Cross Creek from the Ohio River to the shelter.

Over time, the shelter has undergone considerable change in size and conformation as degradation of the ceiling contributed everything from sand grains to large blocks of sandstone to the floor of the shelter and as the brow, or outer edge of the overhang, broke away. Runoff and gravity delivered more detritus to the front of the shelter from higher up the valley wall. In the last 30,000 years, deposits more than 13 feet (4 m) in thickness accumulated in the floor of the shelter, slowly at first, then more rapidly. By some 16,000 years ago, when evidence suggests people may first have visited the shelter, only 3 feet (1 m) or so of sediment had built up on the bedrock floor. The archaeological evidence of human occupancy — such things as simple fire pits, animal bone and plant-part food-scrap, and chipped stone tools — is intercalated with the overlying 10 feet (3 m) of layered fill.

Adovasio and his team excavated through this complex stratigraphy employing excruciatingly detailed procedures, a fact acknowledged even by the site's most ardent critics. The excavations were conducted with cultural as well as geological objectives in a mode often called, "geoarchaeology." Especially commendable were geomorphological investigations up and down Cross Creek Valley; construction of a roof over the excavation to protect the deposits and allow work to proceed no matter the weather; excavation beyond the confines of the rockshelter into the talus slope out front; comprehensive and detailed recovery of geological, botanical, faunal, and cultural data inside and outside of the shelter; and protected maintenance of the open excavation after the end of fieldwork. This latter affords a "witness record" of the stratigraphy to be examined and even sampled when the opportunity or need arises.

Meadowcroft investigations were the beneficiary of extraordinary funding that supported the long-term, comprehensive — some would say, excessive — effort. All too often, similar sites are investigated on minimal budgets or confined by the rushed schedules of contracted archaeology in advance of some land-altering road or power plant project.

One outstanding result of the intensive sampling in the Meadowcroft excavations is a sequence of 52 radiocarbon dates in almost perfect stratigraphic order. Eleven major depositional strata are defined, each incorporating many small lenses of finer scale, from the base upward designated I through XI.
Stratum I, with dates between about 35,000 and 23,000 years ago, completely lacks cultural evidence. Stratum II is subdivided into lower IIa and upper IIb. At the base of IIa are sediments dating c. 23,000 to 17,000 years ago; they also lack clear-cut evidence for human presence. Throughout the strata, from bottom to top, are pieces of the sandstone ceiling that were deposited there from slow but unrelenting degradation. At two levels, one in mid stratum IIa (c. 15,000 years old) and another in upper stratum IIa (c. 12,000 years old), excavators found massive roof fall debris indicating brief intervals of more rapid spalling. Near the top of stratum IIa begins a 12,000-year sequence of familiar archaeological cultures resting in upper IIa and strata III through XI with a terminal date of c. 300 years ago.

As important and significant as these data may be, they are neither controversial nor particularly newsworthy. It is a modest number of artifacts, bones, plant remains, and fire pits in a less than 1-1/2 feet (a half-meter) thick portion of stratum IIa, dating between about 17,000 and 12,000 years ago, that brought Meadowcroft to the fore and ignited 30 years of dispute.

Comprehensive investigations of the kind executed by Adovasio at Meadowcroft generate a staggering assemblage of notes, photographs, scale drawings, samples, collected specimens, massive files of data, correspondence, and reports from specialists.
The challenge is to conclude a fruitful analysis of all of this evidence and write a synthetic report of findings to disseminate to professional and lay audiences. In most cases, dissemination is in the form of a written monograph, commonly augmented with articles in technical journals along with less technical books or articles for the general reader. Since 1974, aspects of the Meadowcroft findings have appeared in some 23 articles in scientific journals, 33 chapters in books or collected papers, two encyclopedia entries, two Ph.D. dissertations, two fieldtrip guidebooks, four news magazines, and four general interest magazines. At least 60 papers on the site have been presented at professional meetings. All of these writings are authored either by redundancy and no small amount of rhetorical and *ad hominem* exchange. Many of the details expected in a monograph are not revealed, synthesized, or integrated in what has been published. Until this long-awaited publication appears, many questions and the potential for prolonged debate remain.

*Location, location, location,* it is said, are the three most important factors in real estate value. Meadowcroft’s location has a lot to do with the contentious status of the archaeology in its stratum IIa. Foremost among these is the age of lower and middle stratum IIa, radiocarbon dated to 22,000-19,000 and 16,000-12,000 years ago, respectively. There are unquestionable absolutely consistent with the familiar archaeological materials found in those strata and these have not been seriously questioned. Something seemed wrong with those dates from the lower levels of the excavation. Probably, some critics reasoned, it was a result of some kind of contamination by older organic material. Since Meadowcroft is located in the coalfields of southwestern Pennsylvania, either particles of coal or groundwater bearing soluble fractions of coal derived from the bedrock of the Pennsylvanian geologic period became suspected agents of contamination.

A long series of contentious challenges and responses were exchanged in the literature. Numerous other, similar papers were read at meetings, and many heated words were spoken in person. In general, each critique identified a concern, usually with a suggestion for resolving the perceived problem. Each response either pointed out that the concern had already been addressed or that more analysis was done as suggested. To my knowledge, no set of radiocarbon dates has been more thoroughly vetted.

For others, Meadowcroft’s location near the southern edge of the Laurentian ice sheet poses a serious interpretive problem. There are no extinct Pleistocene fauna in the lower layers, and the plant and animal remains that are present are essentially Holocene in
character. These facts are at odds with the prevailing belief that a broad tundra zone existed along the southern margin of the ice.

During the earliest interval of human occupancy, Meadowcroft was more than 93 miles (150 km) south of the ice front and nestled low in a tributary valley of the Ohio River. Floral and faunal evidence brought forth in response to this criticism demonstrates that the near-ice environments of North America were more mosaic in character and included considerable cool-temperate floral assemblages. The faunal evidence from Meadowcroft is consistent with this finding.

Less prominent debates about the cultural status of some specimens from the lowest levels and the possibility of mixing in the deposits dot the history of this site and its interpretations stemming from its investigations, but these disputes have had little lasting effect. The status of Meadowcroft in the archaeological community today is the end product of all of this site-specific debate, as well as much broader developments in the quest for understanding the peopling of the western hemisphere.

In the same three decades of controversy over Meadowcroft per se, the pre-Clovis candidacies of other sites were also in dispute, and the broader debate on the peopling of the Americas approached crescendo. Meadowcroft, of course, has a prominent place in this hemisphere-wide wrangle. Sites like Dutton, Selby, Lamb Spring, Pedra Furada, Old Crow Flats, Manis, Wilson Butte, Schaefer, Hebior, Pendejo, Calico Hills, Blue Fish Caves, Sandia, Varsity Estates, Cactus Hill, Big Eddy, Topper, and Monte Verde brought forth strongly divided opinions centered on acceptance or rejection according to the long-established criteria of site validity. To be a worthy contender as an early, or pre-Clovis, site, there must be artifacts of indisputable human authorship and/or actual human remains found clearly in primary context within an undisturbed geologic deposit that could be dated by reliable means. It is amazing how, in practice, these seemingly clear-cut criteria become the crux of rancorous disputes. Many sites just listed began their academic coming-out with promise only to fail under professional scrutiny. Some dropped out of contention for want of convincing artifacts (e.g. Calico Hills, Pedra Furada, Varsity Estates, Pendejo, Selby), others for questionable geologic contexts (e.g. Sandia Cave, Manis, Lamb Springs), and still others for unacceptable dating (e.g. Blue Fish Caves). Most of these failed on multiple shortcomings.

Monte Verde far away in southern Chile and Cactus Hill relatively close in Virginia, along with Meadowcroft, have emerged as more resilient. Acceptance of these sites is certainly not universal, but in the past 10 or so years, more and more practitioners of the art of archaeology have come to believe that people inhabited the Americas before Clovis.

Although each archaeologist may have his or her more inclusive or exclusive list of sites evidencing a pre-Clovis human presence, a majority probably include all or some of these three sites. I have no doubt that J.M. Adovasio and his associates have played a significant role in this shift by the high standards of their work at Meadowcroft and their staunch defense of their findings.

Their work was not excessive in its attention to detail or the breadth of its coverage. A good case has been made that the early dates are not contaminated, that stratigraphic disturbance does not account for artifacts in stratum IIA, and that the late Pleistocene biota around Meadowcroft was, in fact, a partly deciduous forest with animals not unlike those of the Holocene. By vigorously engaging the critics of the site's stratigraphy, dating, and lack of boreal biotic signature, the Meadowcroft team has largely prevailed in the debate on this one site and abetted the pre-Clovis movement in general. There are still critics, silent doubters, and those who generally accept the site but still have questions. I find myself in that latter category.

It seems to me that the stratigraphic break represented by the major 12,000-year-old roof fall in upper stratum IIA is close to the generally-accepted time marker for the end of the Pleistocene and that the small assemblage of lithic artifacts underneath that roof fall is somewhat older. This assemblage with its non-local varieties of stone, Miller point, small blades, and retouched flakes is similar to the earlier component at Cactus Hill dated to around 17,000 years ago.

So how old is the Miller assemblage at Meadowcroft? The monograph, with its details on stratigraphic contexts of the specimens and the dated radiocarbon samples, will help answer that question, although I have no basis for estimating when it will be completed. Conservatively, as Adovasio and Carlisle have said, an age
between 12,500 and 14,000 years ago may become the prevailing interpretation. Liberally, an age nearer to 16,000 years ago may be supported by the evidence. The older date would more closely match the inferred age of similar artifacts at Cactus Hill. Either way, the assemblage is either as old or older than the accepted time range for Clovis. The quest is now on for a satisfactory replacement of the account of Clovis as the first culture in the Americas.

Scholars from several disciplines are actively pursuing the questions of who first peopled the western hemisphere, where they came from, what route or routes they followed, when they arrived, under what environmental conditions the migration occurred, and what their culture was like. These questions are asked and researched by human geneticists, historical linguists, earth scientists, oceanographers, paleoenvironmentalists, as well as archaeologists in the Americas and prehistorians in the Old World. This is no longer the exclusive domain of a few American archaeologists, and the prospects of a new and better account are bright. My hunch is, though, that in spite of its foibles and limitations, archaeology will be at the forefront of new discoveries, new ideas, and ultimately new theories, and it will continue to be an exciting venture.

Michael B. Collins is a research associate at Texas Archaeological Research Laboratory, The University of Texas at Austin, where he specializes in the early archaeological record of the western hemisphere.