

FORUM

A Response to The Challenges and Opportunities for Mega-Infrastructure Projects and Archaeology by J. J. Carver

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The Crossrail project represents perhaps the most ambitious urban archaeological project ever undertaken in a major urban area. Its director, J. J. Carver, has established a reputation for integrating the archaeological component of a complex undertaking with the maze of construction constraints that are imposed on such projects from a multiplicity of sources. Scheduling and co-ordination with the construction and development end of the undertaking is one of the most complex challenges archaeologists will have to confront, as we enter into 'The Age of Sustainability'. Ours is an age where fiscal and spatial constraints effectively dictate archaeological opportunities and force a pairing of interests (construction and heritage management) between parties whose goals are different, whose priorities may diverge, and whose professional languages are nearly incomprehensible to each other. And yet Carver has made this work in practice by stressing the mutual benefits in accommodating the objectives of these two ostensibly incompatible parties. The benefit of Carver's wisdom on the subject cannot be overstated. It follows that the pioneer of the seminal urban archaeological project

currently underway should chart the pathway of its success. This needs to be done by reviewing lessons learned, successes achieved, and, most importantly, mistakes to be avoided. Accordingly, this brief diary should serve as a blueprint for future urban archaeological ventures and it draws on the range of problems and (ongoing) solutions and travails that can and will confront future archaeologists.

The account is extremely informative and provocative, offering a series of pointers that alert (senior) archaeologists to the need for complete familiarity with construction schedules, engineering requirements (that may often trump purely archaeological concerns), and the *need* for clarity in communication. As an urban archaeologist in New York City, I would hold that nearly all of Carver's cautionary and instructive 'tips' are universal for major metropolitan areas throughout the world. While the laws vary between countries, one comes away with the clear, but not so obvious, truth that the most critical aspect of a productive interaction between archaeologists and developers ultimately centers on early planning and involvement of all parties in project design. Once the project advances to the implementation stage, it may very well be a bit late to optimize and co-ordinate strategies, since the construction 'engine', if you will, has already been set in motion. If the archaeolo-

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gist has not been involved to that point, he/she is at a distinct disadvantage, not only because key milestones and logistics have already been accepted in a work plan, but also because the archaeologist is a latecomer to the proceedings. This puts the archaeologist and, as a result, the heritage resource, at a distinct disadvantage.

The pathway to a successful heritage resource recovery plan is dependent on the degree to which the staged compliance process is initially worked out and subsequently followed. Carver structures his presentation by sequencing the various stages and commenting on each one. Accordingly, he outlines the need for Early Planning and balances the anticipated positive results - specifically an appreciation of the probable presence of specific types of resources based on background work - with the potential pitfalls of unanticipated finds. As the process advances, the nature of the archaeological resource(s) become evident and structural patterns within the development site allow well-trained professionals to adjust their approaches to findings whose structures and significance are known (based on the recurrence of types and forms in the archaeological record). Thus, it is possible to alert various construction subcontractors to the possible delays that may be encountered as familiar structures and assemblages are systematically excavated. This kind of foreknowledge, in turn, allows subcontractors to move to different work areas as archaeology is practiced within the footprint of the active, now archaeologically sensitive, construction zone. As long as contingencies are factored into the developers' construction protocols, it is possible for all members of the site team(s) to be consistently active. The often-costly prospects of site shutdowns and delays are thus obviated and work on the project follows a cost-benefit module. Again, the success or failure of achieving this end depends on scheduling flexibility and nested construction designs that allow all workers to be busy on one task or another. Next, a

premium is placed on the importance of central contracts, which allow for less 'muddle'. This means that all contractors and their teams are tied to a central document that lays out everyone's role and schedule, replete with clearly defined alternate priorities in case delays, accidents, or sudden planning changes threaten to restructure work plans and target milestones. Carver emphasizes that 'quantification of archaeological finds' is a concept that can be grasped by construction teams and may also force adjustments in building schedules. I would add that the opposite is also true, such that unanticipated construction of, for example, interim retaining walls would require archaeologists to shift their attentions to parts of the site that are unaffected by attendant engineering. Here again, the need for protocol flexibility works both ways and planning documents (i.e. the central contract) must accommodate such contingencies formally.

Carver also calls attention to the need for communicating archaeological requirements to project teams (presumably construction teams and subcontractors) as well as the need for 'deposit modeling' or, presumably, recognizing the potential for preservation of deeply buried and archaeologically sensitive deposits. The latter concern is identified in a topic sub-head and not really elaborated upon, despite its significance for altering costs and schedules. In the US, we program such contingencies into a work plan; it is not clear how this situation is dealt with on Crossrail. A discussion on 'critical path' is left to the conclusion of the step-wise presentation of the archaeological planning process. I think this discussion is confusing and the 'critical path' scenario can and must be underscored early in the planning process, if only to alert engineers and on-site design personnel that the best laid plans of mice and men DO stand a possibility of going awry.

The discussion ends by sounding an optimistic note in 'lessons learned' wherein it is presumed, with considerable justification, I

think, that cross-pollination between teams of practitioners on any site can only result in avoidance of future mistakes; protocols for interaction are ironed out in one project and key modifications are crafted to avoid such difficulties in upcoming projects. The author rightfully notes that our profession only benefits by mutual respect of the interests of each party, and, further, that our understanding of construction logistics, mechanics, and priorities will only enhance our ability for mutual interaction with partners with whom we will inevitably be paired in the Age of Sustainability. The net result is that ultimately the historic resource benefits and this is our target objective.

These are the pivotal lessons that *I have gleaned* from Carver's presentation. And I use the term 'gleaned' advisedly. Those of us who have been in Carver's position, as front-line directors, or per the U.S. classification as Principal Investigators in complex urban sites, will consistently nod and smile in agreement with nearly all of the author's points. Those who have not will find this presentation very tough going. It presumes a level of familiarity with jargon, formal concepts, and acronyms that most in the target audience will not have. While I can appreciate that many of the references to compliance laws, construction staging sequences, and contractual statutes are unique to the U.K., I would be surprised if even locally-based field archaeologists, construction personnel, and even regulators would find this a digestible read. An international readership of cultural resource and heritage-based (i.e., applied) archaeologists would be completely lost. I freely admit that it took me four or five readings to digest the invaluable information provided because of the cumbersome style in which it was written. Run-on sentences abound, to the degree that even simple concepts and representations can be forgotten by the time the reader reaches a period to the sentence. I am thankful that sub-heads were used, because otherwise there is a 'free association' tone to the presentation that

very loosely structures the continuity of the delivery. Next, given the complexity of Crossrail and the numerous field-based circumstances to which Carver alludes, we are not presented with examples of the types of situations that would require the rapid scheduling adjustments often alluded to in various sections of the presentation.

I am not certain whether or not this piece is addressed to the general archaeological community (including academics) and/or contractors and regulators. I am assuming, also perhaps wrongly, that this article, or a variant thereof, would be targeted to an audience of engineers, construction supervisors, environmental specialists, and design personnel. If applied archaeologists fail to follow the flow of the presentation, vested parties trained in other fields will have their hands full trying to figure out what is being said. That would apply to non-applied (i.e., academic) archaeologists as well. Again, the sub-heads provide a guideline for staged sequences in the process that all parties can appreciate, but the details contained within each description are muddled and obscured by the writing.

The message that is housed within Carver's piece is more than critical. It identifies the range of difficulties that archaeologists, construction planners and regulators must confront in this most complex of urban archaeological sites. If this diverse audience of consumers/readers is to absorb the invaluable lessons that are transmitted, the message must be delivered in a way that is comprehensible to all parties. It should be done in a way that is easily visualized and absorbed. That means toning down (but not 'dumbing down') the language to the degree that the concepts, ideas, and suggestions can be grasped without resorting to dictionaries and reference materials. Next, run-on sentences must be avoided at all costs. Third, examples for field and analysis situations have to be drawn specifically from the Crossrail study so that personnel from any aspect of the project can assimilate the

lessons learned with clarity. In this way, non-archaeological professionals will be able to take a sounder understanding of the process to future development projects and provide critical input to their colleagues in planning and design.

Finally, our experience in analogous situations in the U.S. has shown that perhaps the best instructional vehicle for linking the multiplicity of components that underpin a successful interaction between archaeologists and construction/design teams is to illustrate them graphically. That means depicting the components involved in staged planning and implementation in flow charts and critical path sequences tied to timelines. An article of this type would be best served by pro-

viding a flow chart for each of the subheads described in the text.

Summarily, while it is not clear to me which audience is targeted for this piece, it remains an enormous challenge to make such an interdisciplinary presentation graspable in any format. Short and simple sentences would be a first step in the process. Using flow charts and diagrams keyed to stages in the project developmental sequence is another. Carver's piece touches on all the key points that applied archaeologists and their development/construction counterparts need to be aware of. However, as it stands, the document is dense and confusing. This is unfortunate because the hidden message is complete and it gets lost in the transmission.

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