9th International Conference on NDT of Art, Jerusalem Israel, 25-30 May 2008
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THE USE OF RADIOLOGICAL TECHNIQUES IN ARCHEOLOGY

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Medical imaging employs a variety of non-invasive techniques which are suitable for archeological investigations, including radiography, computerized tomography (CT), and magnetic resonance imagine (MR). Each of these techniques has advantages and disadvantages which will be discussed, which must be known and understood before their true potential can be utilized for these investigations. At this time, however, state of the art CT is the most useful method. In the early days CT was a static modality in which the object to be scanned was scanned in sequential thick slices, very much like slicing a loaf of bread, and the data was only viewed as slices. A useful 3D depiction of the object could not be obtained. In the last few years, CT has undergone rapid technological advances which have been assisted greatly by increases in computing power that allow an object to be continuously advanced through the scanner yielding a volumetric, or helical, data set which can be reconstructed into sections so thin that an isotropic 3D data set is created which can then be manipulated in very useful ways. Two main uses of this capability are: 1.) The ability to reconstruct the data in any plane, revealing information that is not apparent from either the source images or from any other imaging technique. 2.) The ability to produce detailed surface images which can then be manipulated to “strip away” overlying layers to reveal the surfaces and shapes of internal structures. The utility of CT will be demonstrated by imaging the surface of an internal cuneiform tablet still enclosed within its intact clay envelope, through scanning of a model constructed for this purpose, and from manipulation of human images to show internal layers and structures.