



Identity criteria and fundamental concepts in archaeology

The case of the
“archaeological site”

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Aim of research



- Formally represent the “reasoning process” in archaeology
 - Information - the **pattern of organization** of physical or digital objects, conceptual structures, and semantic relationships.
 - Source
 - Organization
 - Representation and interaction
- Identification of fundamental concepts in archaeology
 - Definition of their identity criteria
 - Representation of the relation between such concepts
- Impact of informatics on the archaeological discipline (enablers and constraints).
- Intellectual need for transparency of research (e.g. data provenance/quality and formal knowledge representation).



Aim of research



- There are more than one useful senses of the term “site”
- Different definitions have different “fitness for purpose”
- Are there few “core” senses ?
- Can we describe their identity criteria, such that a particular sense can be used in an information system unambiguously?
- What is the purpose of each sense, and how do we formally represent this?

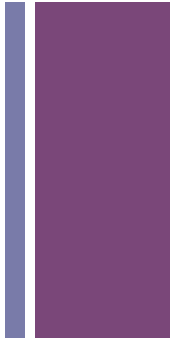


Fundamental concepts in Archaeology



- Archaeological site
 - Archaeological research – excavations
 - Regional research – surveys
- Management – administrative (not addressed in this paper)
- Basic research unit
- Most common term of discussion among archaeologists and beyond
- Any discussion in archaeology eventually involves the term

+ Archaeological site common definitions



- ...the **smallest unit of space** dealt with by the archaeologist... it be fairly continuously covered by the remains of former occupation, and the general idea is that these pertain to a single unit of settlement... the basic unit for stratigraphic studies... It is in effect the minimum operational unit of **geographic spaces**.
 - Willey, G.R. and Phillips, P. 1958. *Method and theory in American Archaeology*. Chicago: University of Chicago Press.
- A site is any place, large or small, where there are to be found **traces of ancient occupation or activity**.
 - Hole, F. and Heizer, R.F. 1973. *An introduction to prehistoric archaeology*. New York: Holt, Rinehart and Winston.

+ Archaeological site common definitions



- ...**a spatial cluster** of cultural features or items, or both... The formal characteristics of a site are defined by its formal content and the spatial and associational structure of the population's cultural items and features present.
 - Binford, L. R. 1964. A Consideration of Archaeological Research Design. *American Antiquity*, 29.4 :425-441.
- ...provides the framework for recording artifact provenience and usually serves as a sampling frame at some level in most fieldwork and, by default serves as **the unit of artifact association**. Site is usually depicted as **a basic unit of archaeology**.
 - Dunnell, R. C. 1992. The Notion Site. In Rossignol, J. and Wandsnider, L. editors, *Space, Time and Archaeological Landscapes*, p.21-41. New York: Plenum Press.
- A distinct **spatial clustering** of artifacts, features, structures, and organic and environmental remains—the residue of human activity.
 - Renfrew, C., P. G. Bahn. *Archaeology: Theories, methods, and practice*. Thames and Hudson, 1991.

+ Archaeological site common definitions

- ...any **place** where object, features, or ecofacts manufactures or modified by human beings are found... **Any material remains** of the past which offer potential for archaeological investigation and analysis as a means of contributing to the understanding of past human communities.
 - Darvil, T. 2008. *The Concise Oxford Dictionary of Archaeology Online*. Oxford New York: Oxford University Press.
- ...**activity areas and rubbish**. That is where people have done things in the past and left some residue of having done something...
 - Drewett, P.L. 2011. *Field Archaeology. An Introduction*. Oxon: Routledge.
- An archaeological site is **a place** ... in which evidence of past activity is preserved ... and which has been, or **may be, investigated using the discipline of archaeology** and represents a part of the archaeological record.
 - <http://en.wikipedia.org>

+ Archaeological sites

■ basic necessary characteristics:

- defined following an archaeological investigation (survey or excavation)
- must have some remains (features, e.g. a fountain, or artifacts, e.g. arrowheads).
- remains have to be "clustered" following an anthropogenic activity.
- deliberate human activity at the site, which left the identified remains.

■ Ambiguities

- spatial boundaries delineation - along identified formal cluster of finds
- temporal boundaries limitations – none
- definition does not deal with variations of the above, such as: same human activity (of one cultural group) repeated over several episodes, different human activities (of a single cultural group) in a single time period, different cultural groups doing the same activity in the same time, or in different time periods.
- does the "archaeological site" represent "a single unit of settlement", or "the minimum geographic unit"?

+ Tabun cave Israel

- Half a million years between the lower part (G) and the upper part (B).
- Key site for human evolution



+ Tel Megiddo Israel

- One of the biblical city-kingdoms
- Over 3000 years of existence



- The biblical city kingdom of Armageddon
- Ca. 4000 years of existence

+ Karkoum mountain

- “Altar of the twelve tribes”
- Petroglyphs





Identity conditions



- Defined by the nature (causality) of the relations:
 - Objects – context (observation)
 - Objects – objects (observation)
 - Human activity – objects (inference)
 - Association of activities (inference)
- Delineation of spatial borders
 - declarative(end of resources for excavation, permission limitations, etc.)
 - external constraints (e.g. a road, a building...)
 - phenomenological/observable (distribution of remains)
 - guesstimated – input from other disciplines
- Delineation of temporal borders
 - Crisp end – event (excavation), blur beginnings
 - Reference to other disciplines (e.g. history, physics / chemistry)



4 alternatives of substance



- Place
 - Defined by declaration /observation /past activity
 - As diachronically existing
- Matter
 - Concentration of a class of remains
 - As being stable/at rest for “a longer time”
- Spatially bound activity of the past
- ***An Information Object of scientific explanation***



Identity criteria – archaeological sites



■ What

- Physical space
- Social space

■ When

- Subject to identification by archaeologist (?)
- Comes into existence once an archaeological activity starts (survey, excavation)
- Temporal boundaries (usually a blur beginning – terminated by the modern process of archaeological excavation).

■ Who

- Exclusiveness
- One / multiple manifestations of human activities
- Mixture of anthropogenic / natural events
 - E.g. stratigraphy: tower built, abandoned, natural decay, build a cemetery.

+ Working definition Archaeological site

- The goodness-of-fit between one or a series of (un)related past activities and the subsequent material culture produced and their manifestation in the present, as recorded during an archaeological investigation (e.g. excavation).

On-going work:

- Who are the actors involved (in the past and in the present)
- Where is it manifested?
- What knowledge is it based on?

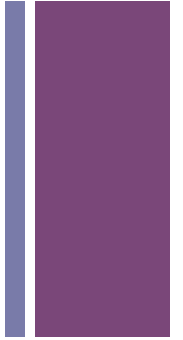


Example – defining archaeological sites following an excavation



- Decision of excavation spatial boundary
 - Following an observation (e.g. change in sediment, anthropogenic feature, etc.)
 - Following an hypothesis (e.g. looking for the wall's foundation)
 - Following an interpretation (e.g. this is the floor of a room)

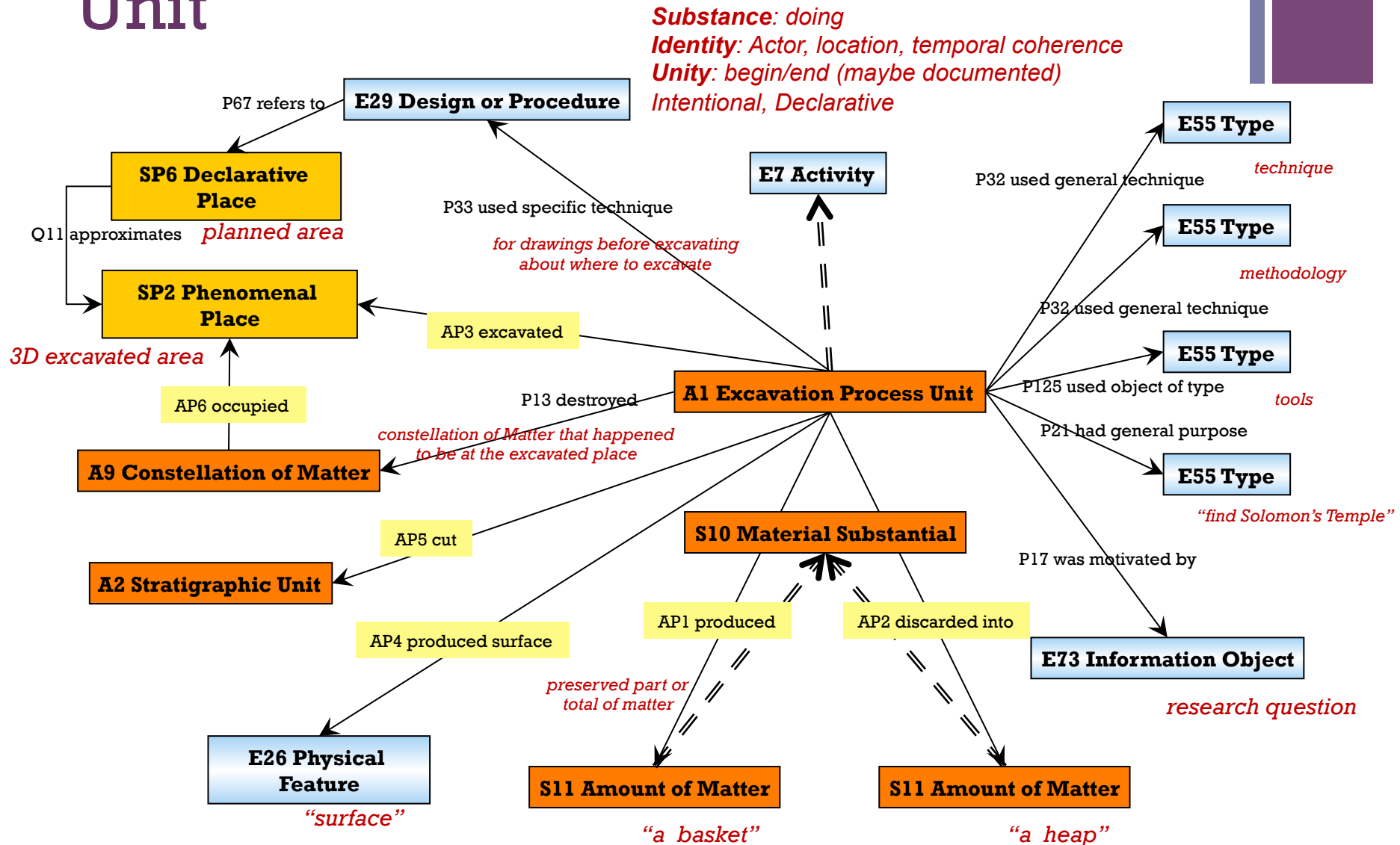
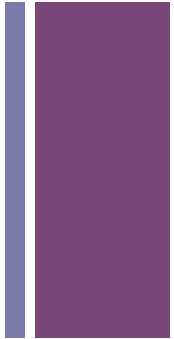
+ Information integration



- Structure of information
 - Inner representations
 - Conceptualization
 - Identity and unity criteria (archaeological site)
- Formal ontologies – CIDOC-CRM
 - Explicit representation
 - Decoding information
 - Understand epistemology of archaeology
 - Representation of experts' judgment



CRMarchaeo: Excavation Process Unit





WP 14 Addressing Complexity

CRMarchaeo:

Modelling Context, Stratigraphic Unit, Excavated Matter

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