



RECYCLING IN THE ROMAN WORLD: DEFINITIONS, MATERIALS, AND ORGANIZATION

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CONCEPTS/TERMS

WASTE: RECOVERED/DISCARDED

WASTE STREAM

PROVISIONAL DISCARD; DEFINITIVE DISCARD

RECYCLING; REUSE

RECYCLABLES; RECYCLATE

UPCYCLING/DOWNCYCLING

**CATEGORIES OF REFUSE: CONSTRUCTION, HOUSEHOLD,
INDUSTRIAL/COMMERCIAL**

Total pour
l'année 2012
345 Mt

déchets de construction
247 Mt

71% CONSTRUCTION

collectivités
4 Mt

déchets d'activités économiques
(hors BTP et assimilés)
63 Mt

18% INDUSTRIAL/COMMERCIAL

ménages (DMS)
31 Mt

09% HOUSEHOLD

02% PUBLIC

RÉPARTITION DES DÉCHETS PAR SECTEUR EN FRANCE. Source: Eurostat, RSD, 2012.

CATEGORIES OF REFUSE, MILLIONS OF TONS, FRANCE, 2012

CONSTRUCTION WASTE

BLOCKS/FRAGMENTS

CONCRETE FACING ELEMENTS (BRICKS, *CUBLIA*)

REVTMENT PLAQUES (MARBLE)

SCULPTED ARCHITECTURAL ELEMENTS/FIXTURES (COLUMNS, BASINS)

PAVING STONES (BASALT AND OTHER)

MOSAIC *TESSERAE* (STONE, CERAMIC, GLASS)

CERAMIC ELEMENTS (ROOF TILES, PAVING TILES, PIPES)

METAL (IRON, COPPER ALLOY, LEAD) ELEMENTS (PINS, NAILS, SEALANT, WINDOW GRATES, LOCK PLATES)

PLASTER/COCCIO PESTO RUBBLE

WOODEN ELEMENTS (BEAMS, PLANKS, FRAMES, DOORS, SHUTTERS,)

BONE (DOOR PIVOTS)

TEXTILE FITTINGS (AWNINGS)

GLASS FITTINGS (WINDOW PANES)

HOUSEHOLD WASTE

CRAFT GOODS: STONE, GLASS, CERAMIC, FAIENCE, PLASTER, METAL/METAL ALLOY , HARD ANIMAL PARTS (BONE, TOOTH/TUSK, HORN, IVORY, SHELL), SOFT ANIMAL PARTS (LEATHER, VELLUM), TEXTILE, FELT, WOOD, PLANT FIBER

COMPOSITE CRAFT GOODS

FOOD WASTE: BIODEGRADABLE/COMPOSTABLE, DURABLE/INERT (BONE, TOOTH, HORN, SHELL)

COOKING ASH

HUMAN/ANIMAL URINE AND FECES

ANIMAL CARCASSES

MANUFACTURING/COMMERCIAL WASTE

UNUSED RAW MATERIALS

BY-PRODUCTS OF PROCESSING OF RAW MATERIALS (SLAG, ETC.)

BY-PRODUCTS OF COMBUSTION (ASH)

**BY-PRODUCTS OF REDUCTIVE PRODUCTION OPERATIONS
(LEATHER, TEXTILE, WOOD OFFCUTS, STONE CHIPS, ETC.)**

CRAFT GOODS WITH MANUFACTURING DEFECTS

UNDISTRIBUTED CRAFT GOODS

TOOLS, FIXTURES AND FACILITIES

AGRICULTURAL WASTE

TOOLS AND FIXTURES

PRUNINGS OF FRUIT TREES AND VINES

OLIVE AND GRAPE PRESSINGS

CHAFF AND STRAW

ANIMAL FECES (MANURE)

MATERIALS RECYCLED BY ROMANS

**TEXTILES, PAPYRUS, STATUARY, ARCHITECTURAL ELEMENTS,
OBJECTS IN METAL AND GLASS**

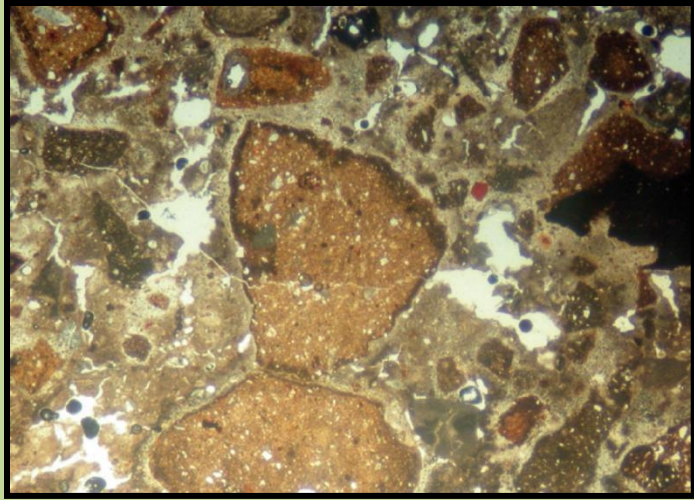
CERAMICS (*POZZOLANA*, TEMPER)

HUMAN/ANIMAL FECES AND URINE

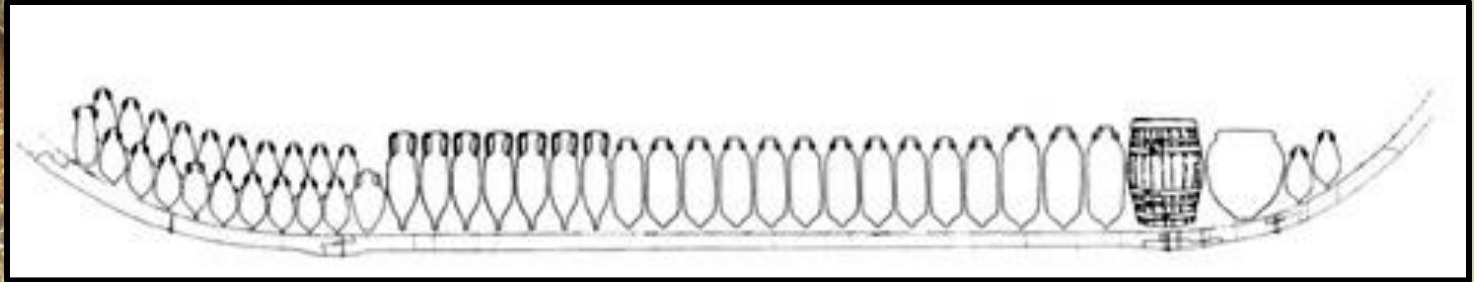
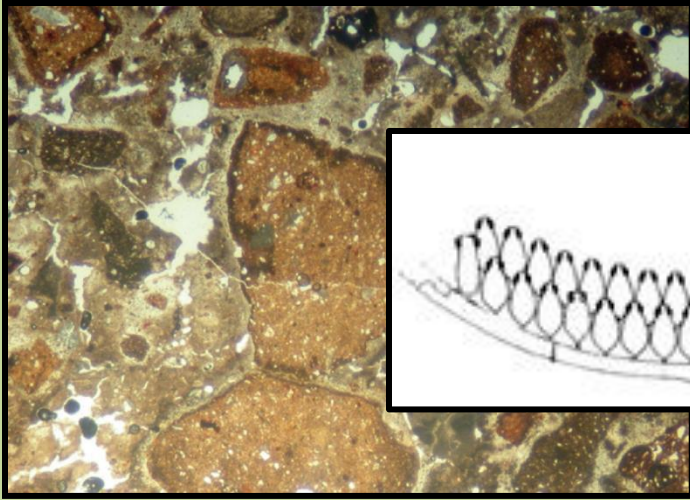
ANIMAL BONE

ASH

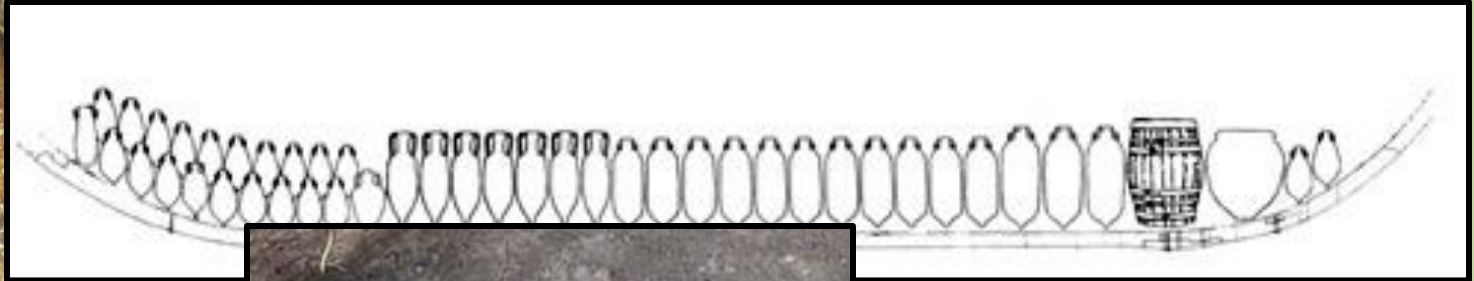
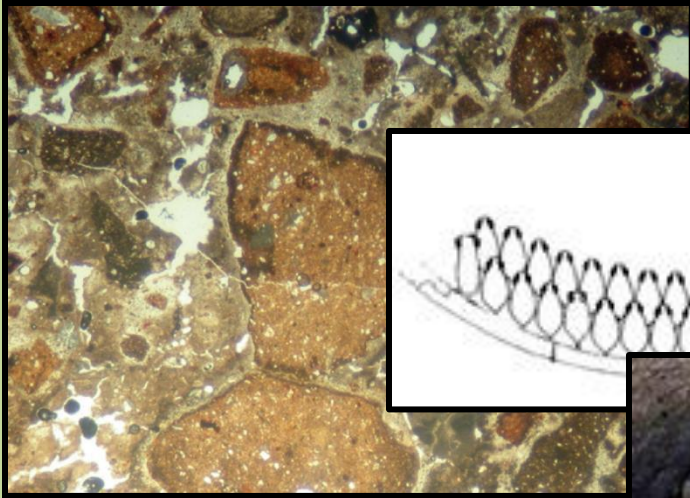
EVIDENCE FOR ROMAN RECYCLING



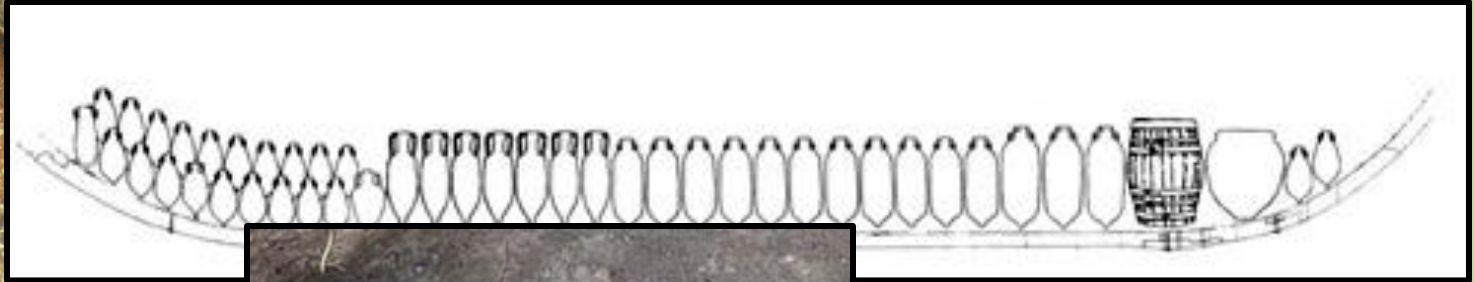
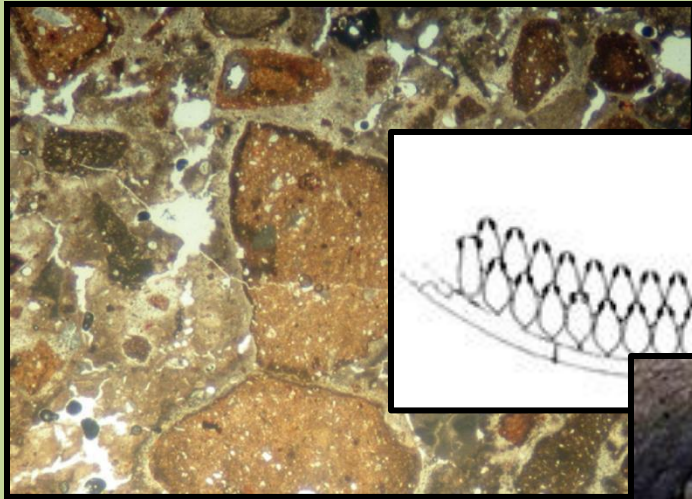
EVIDENCE FOR ROMAN RECYCLING



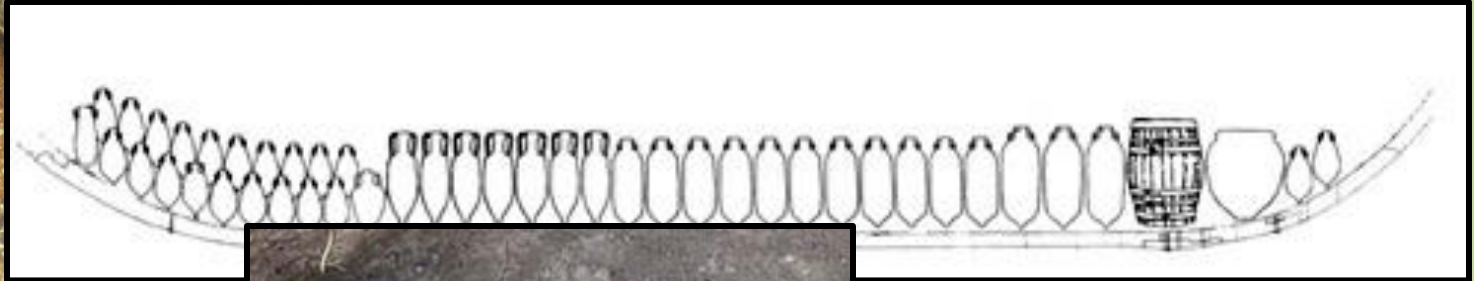
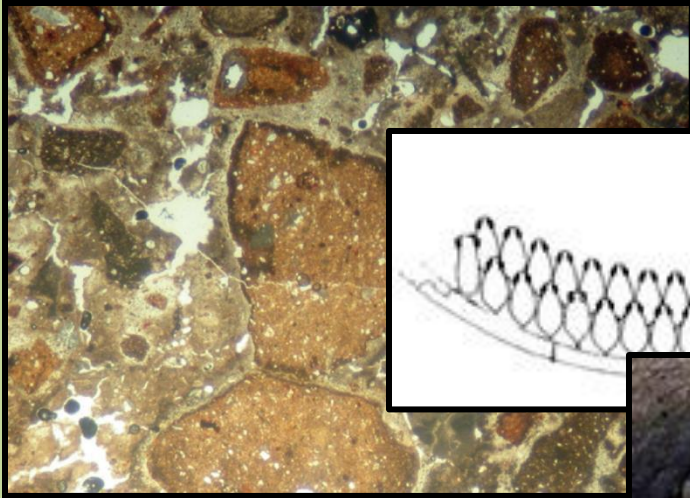
EVIDENCE FOR ROMAN RECYCLING



EVIDENCE FOR ROMAN RECYCLING



EVIDENCE FOR ROMAN RECYCLING



MARTIAL EPIGRAMS I.41

...hoc quod Transtiberinus ambulator
qui pallentia sulphurata fractis
permutat uitreis



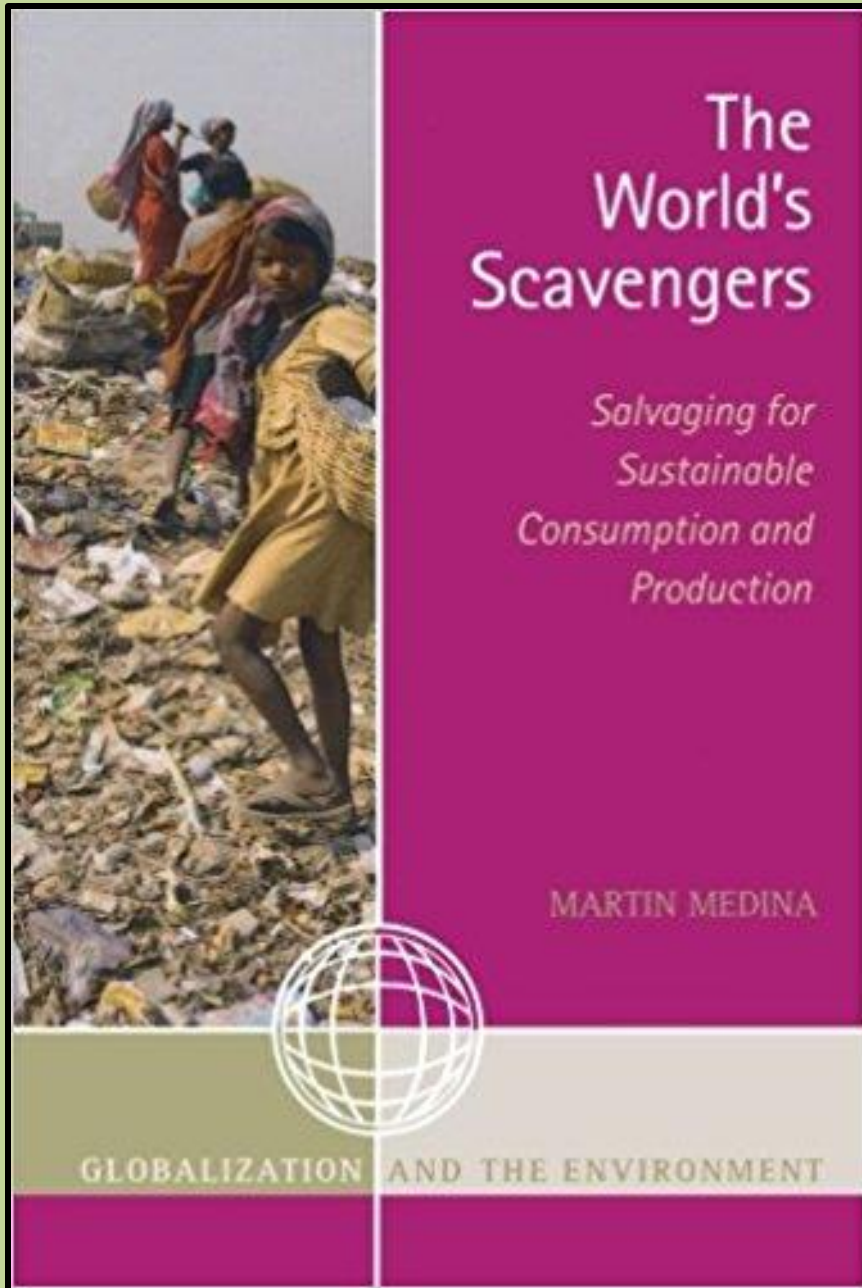
The World's Scavengers

*Salvaging for
Sustainable
Consumption and
Production*

MARTIN MEDINA



GLOBALIZATION AND THE ENVIRONMENT



FORMS OF WASTE PICKING

1. MOBILE URBAN INDEPENDENT

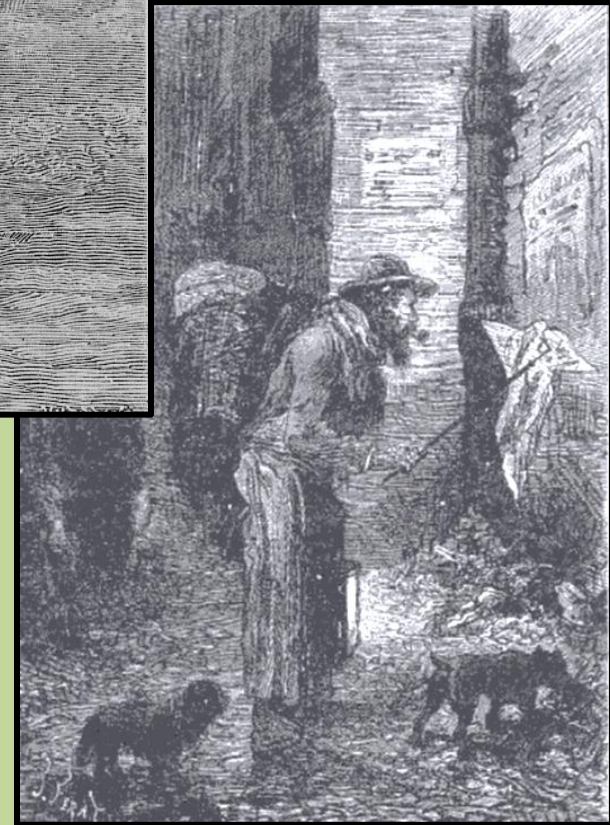
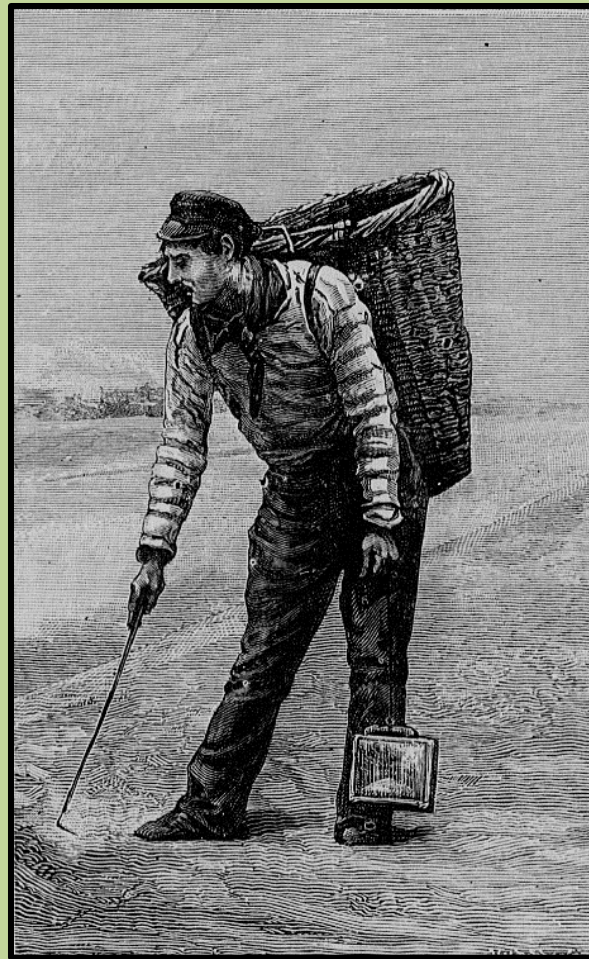
2. MOBILE URBAN LINKED

3. SORTING PLANTS

4. NON-URBAN MOBILE

5. OPEN REFUSE DUMP

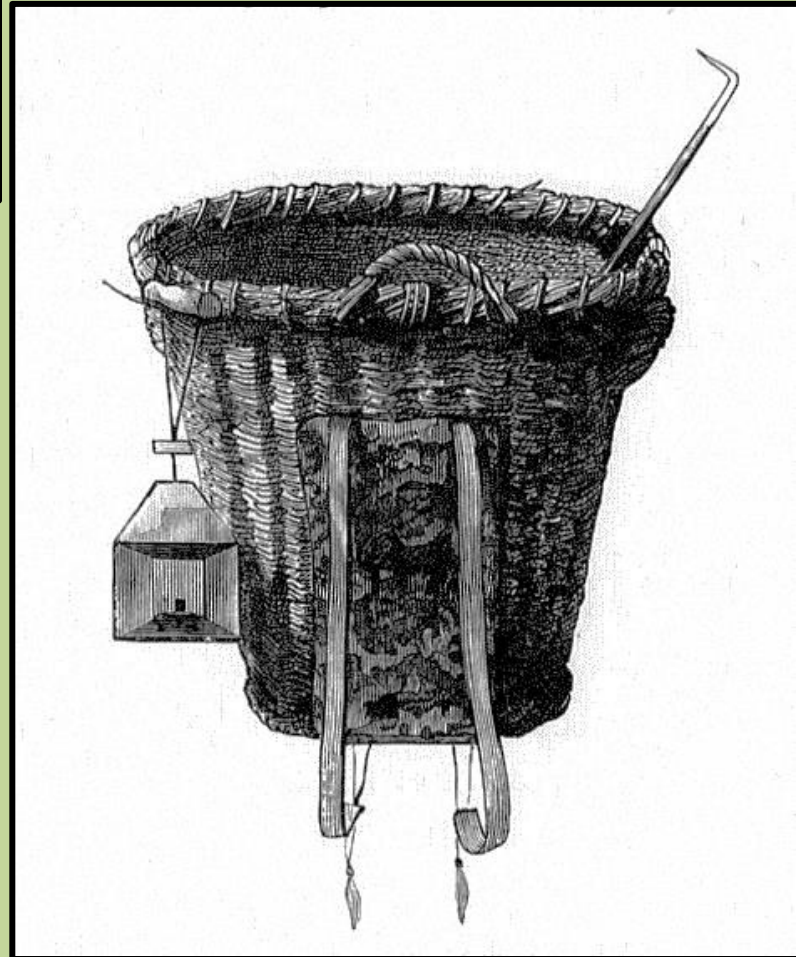
CHIFFONNIER (“RAG MAN”)
PARIS, 1820S-1880S



TOOLS

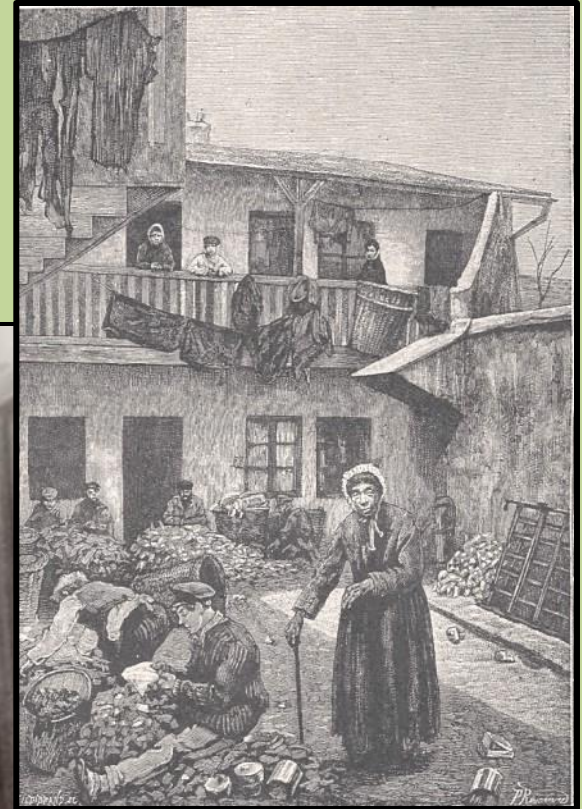


CROCHET

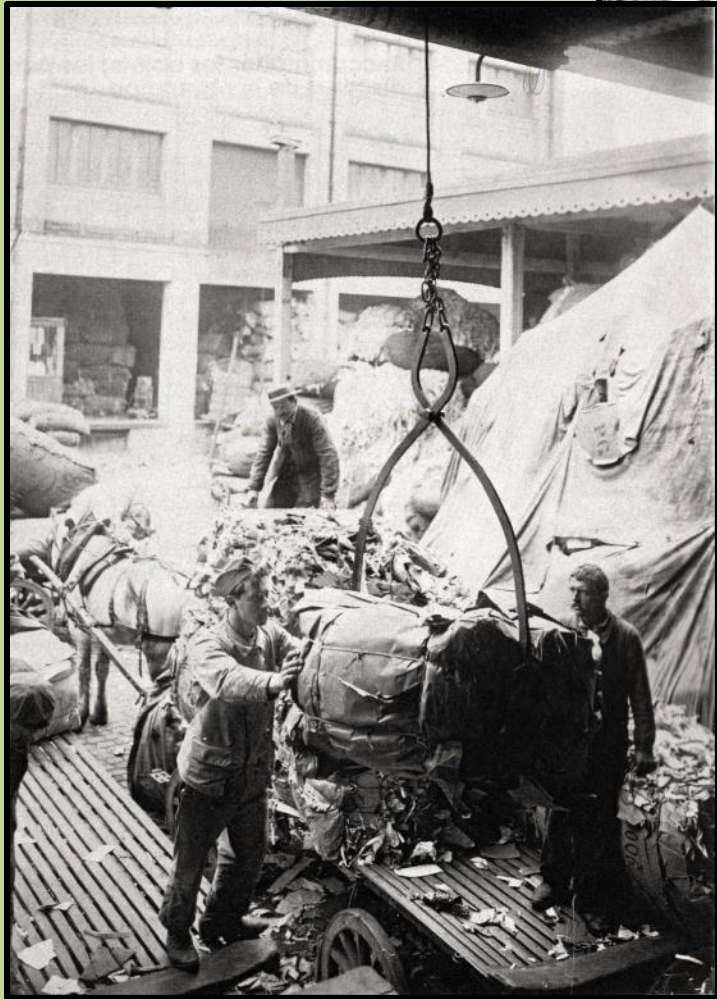


HOTTE

SORTING



SALE TO MIDDLEMAN (RAGS)



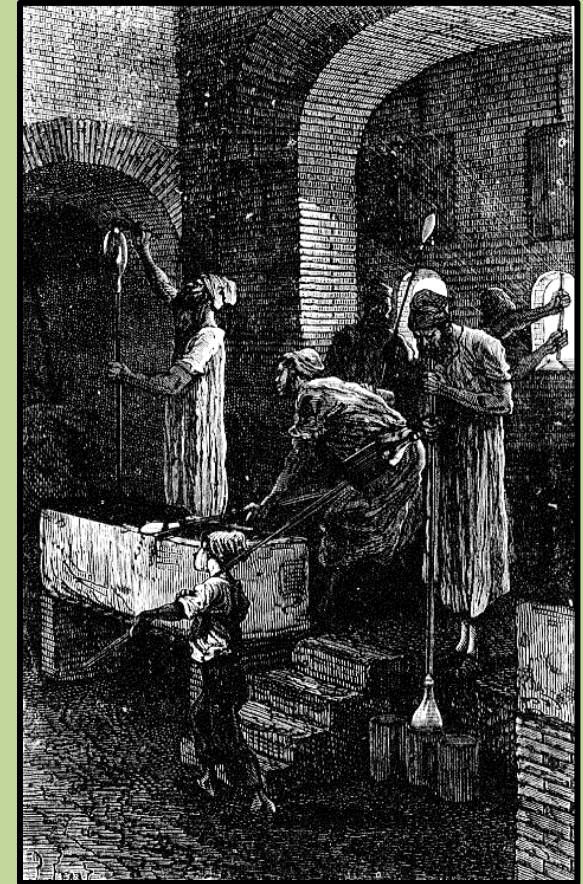
PRODUCTION EMPLOYING RECYCLATE (GLASS)



1. SORTING OF FRAGMENTS



2. WASHING OF FRAGMENTS



**3. MANUFACTURE
OF BOTTLES**

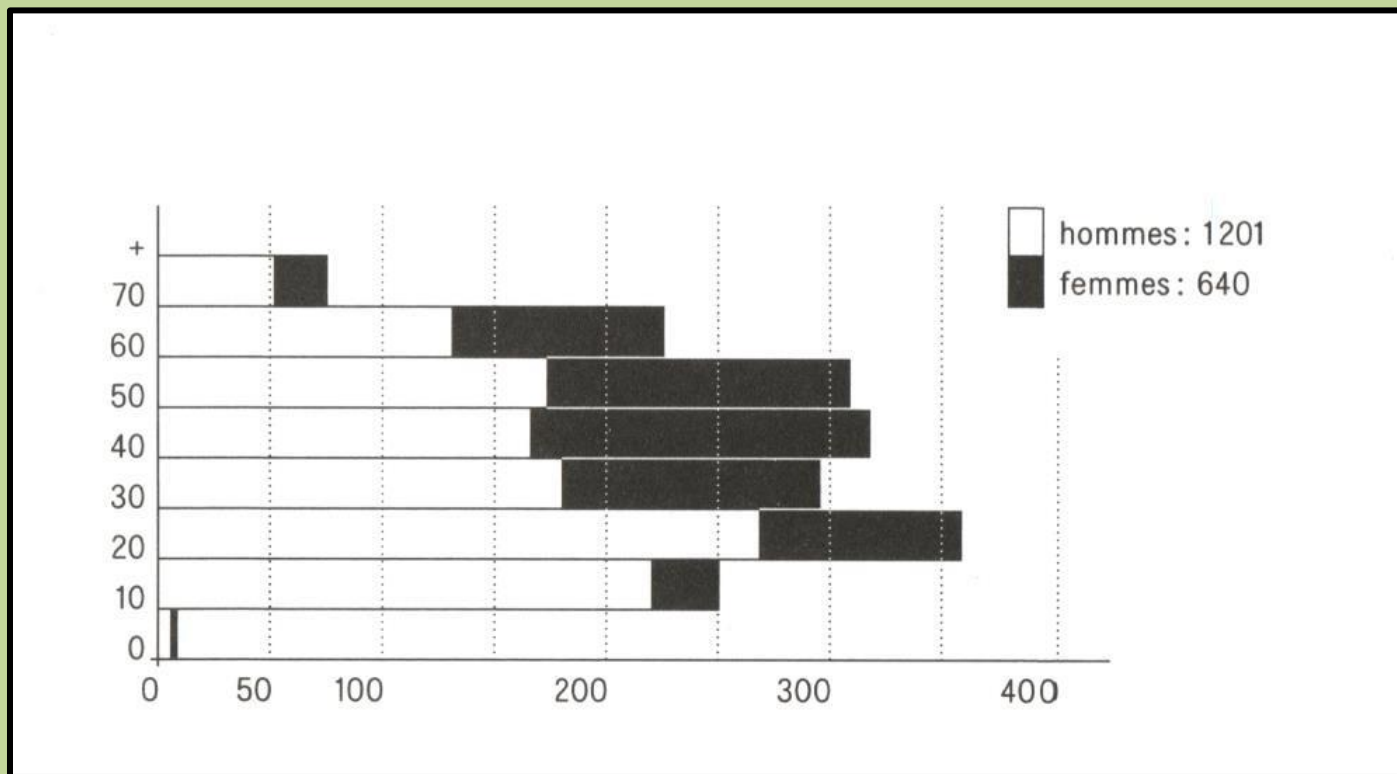
CHIFFONNIERS PLACIERS



CHIFFONNIER'S PLAQUE, 1850



NUMBER OF *CHIFFONNIERS* REGISTERED IN PARIS BY AGE AND SEX, 1829



(FROM D. CHEVALLIER AND Y.P. TASTEVIN EDS. *VIES D'ORDURES: DE L'ÉCONOMIE DES DÉCHETS*, 2017)

PARISIAN *CHIFFONNAGE*: POINTS OF INTEREST

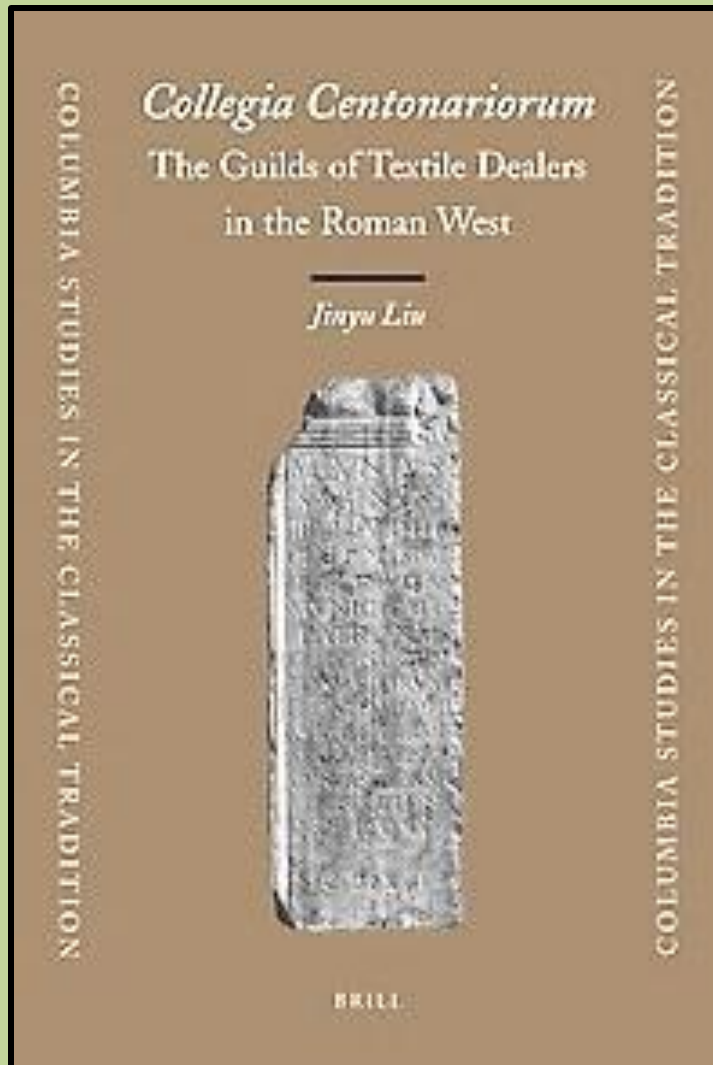
- 1. SUPPORTED SMALL, THOUGH SIGNIFICANT PORTION OF POPULATION IN LARGE CITY ANALOGOUS TO ROMAN TOWNS.**
- 2. OFFERED EMPLOYMENT TO PERSONS OF ALL AGES AND BOTH GENDERS.**
- 3. FOCUSED ON ONE PRINCIPAL RECYCLABLE, BUT ALSO INVOLVED SEVERAL OTHERS.**
- 4. FACILIATED BY COMPLEX, HIERARCHICAL SYSTEM THAT INVOLVED SPECIALIZED MIDDLEMEN.**
- 5. ALLOWED SOME PARTICIPANTS TO BECOME WEALTHY.**
- 6. MUNICIPAL ADMINISTRATION INTERESTED IN AND REGULATED IT.**

CENTONARII

***COLLEGIA CENTONARIORUM* ATTESTED EPIGRAPHICALLY IN CA. 80 MUNICIPALITIES IN ITALIA AND SEVERAL PROVINCES (AFRICA PROCONSULARIS, BAETICA, TARACCONENSIS, GALLIA LUGDUNENSIS, GALLIA NARBONENSIS, ALPES MARITIMAE, DALMATIA, NORICUM, PANNONIA SUPERIOR, PANNONIA INFERIOR, MOESIA SUPERIOR, DACIA)**

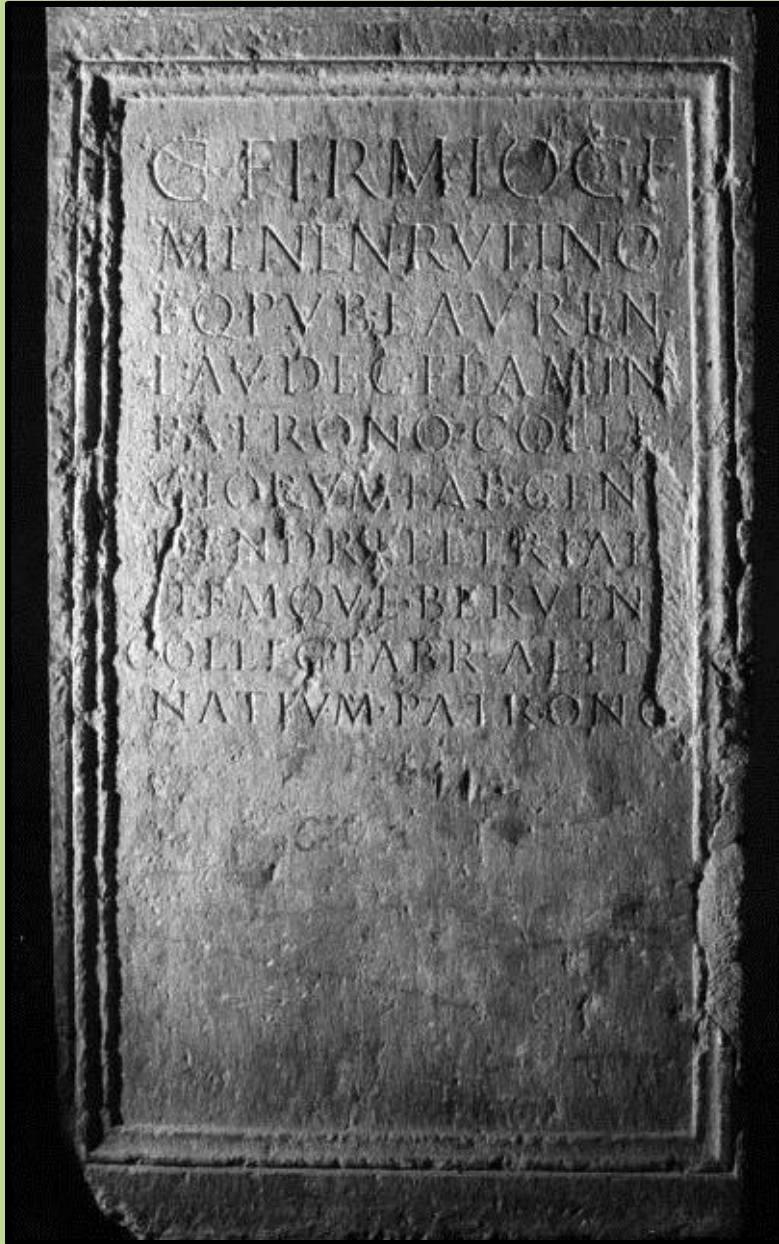
PARTICULARLY ABUNDENT IN CENTRAL AND NORTHERN ITALIA AND GALLIA NARBONENSIS

ATTESTED 1ST C. BC/1ST C. AD TO END 4TH C. AD (AND AD 430S)



J. LIU 20009

***CENTONARII* =
MAKERS AND SELLERS OF
LOW- AND MEDIUM-
QUALITY CLOTH**



CIL 5.2071 (= ILS 6691)

FELTRIA/FELTRE

**ITALIA REGIO X (VENETIA ET
HISTRIA)**

AD 131-200

C(aio) Firmio C(ai) f(ilio)

Menen(ia) Rufino

eq(uo) pub(lico) Lauren(ti)

Lav(inati) dec(urioni) flamin(i)

patrono colle

giorum fab(rum) cent(onariorum)

dendr(ophororum) Feltriae

itemque Beruens(ium)

colleg(ium) fabr(um) Alti

natum patrono

PASSAGES REGARDING *CENTONARII* IN *CODEX THEODOSIANUS*

CTh.14.8.1

Imp. constantinus a. ad evagrium praefectum praetorio. ad omnes iudices litteras dare tuam convenit gravitatem, ut, in quibuscumque oppidis dendrofori fuerint, **centonariorum adque fabrorum collegiis** adnectantur, quoniam haec corpora frequentia hominum multiplicari expediet. dat. xiiii kal. octob. naisso, accepta viii id. novemb. constantino a. iiii et licinio iiii cons. **(315 sept. 18)**.

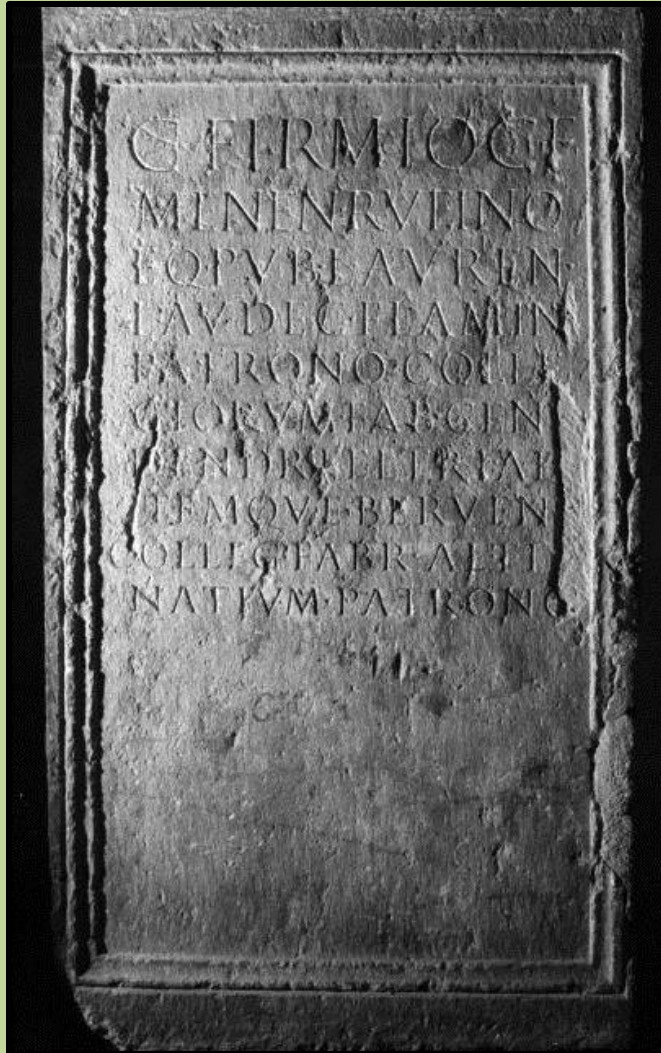
CTh.14.8.2

Imppp. valentinianus, valens et gratianus aaa. ad olybrium praefectum urbi. ne quis **ex centonariorum corpore** subtrahere se possit ad curiam, poena eidem corpori proposita, nisi ilico de eius abscessu querellam deposuerit. dat. v kal. feb. treviris valentiniano n. p. et victore v. c. cons. **(369 ian. 28)**.

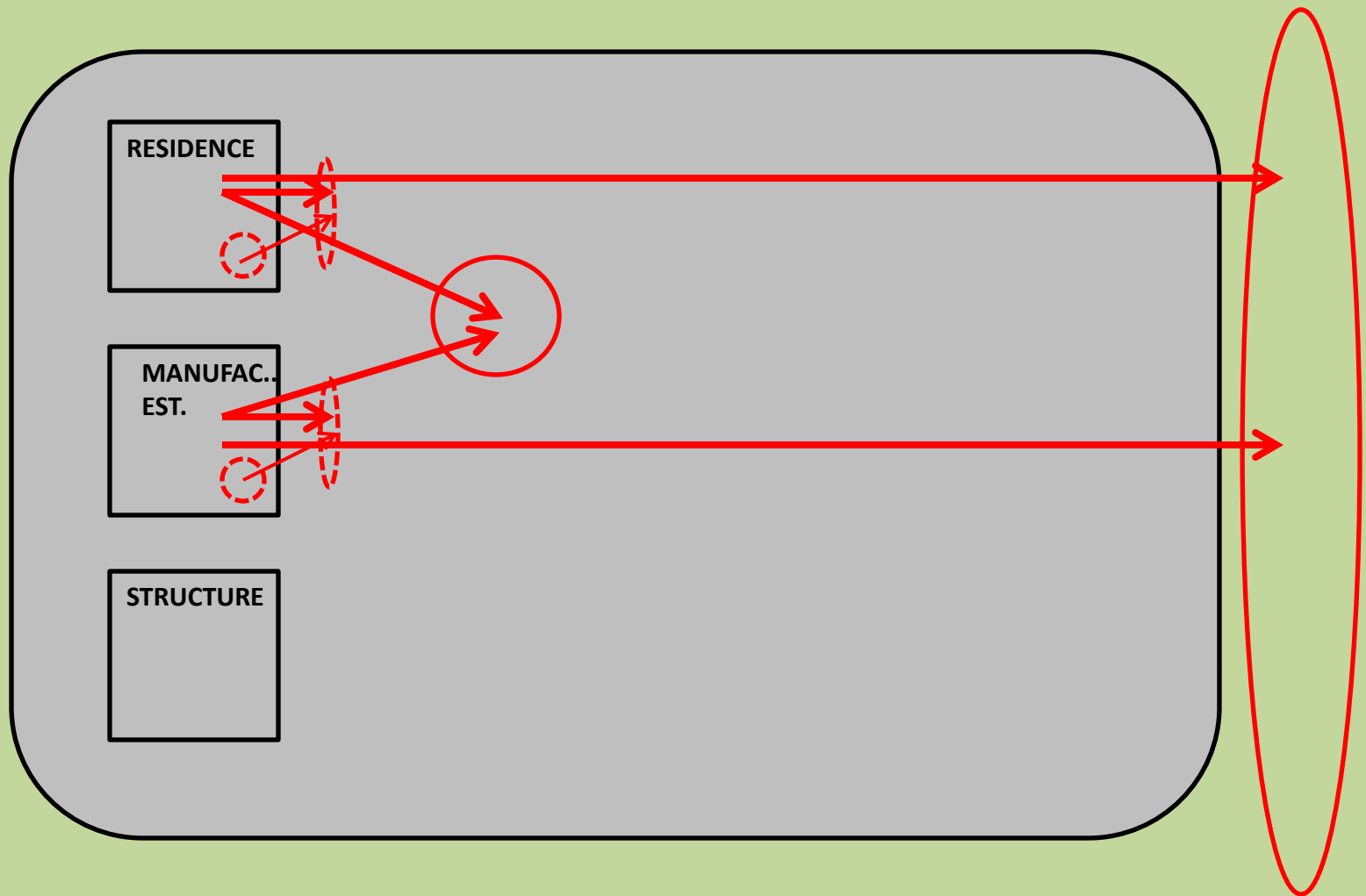
CTh.12.1.162

Idem aa. benigno vicario urbis romae. ne relictis urbibus plures sese **ad corpus centonariorum** transferant, spectabilitas tua, quoscumque et ubicumque latentes curiis atque collegiis debitos adprobarit, matura exsecutione restituat, si quidem tot existentibus legibus, quae occultatores certa feriri poena voluerunt, exsecutiones praestare iudices conveniat, non referre. dat. kal. dec. mediolano theodoro cons. **(399 dec. 1)**.

CENTONARII \cong CHIFFONNIERS?

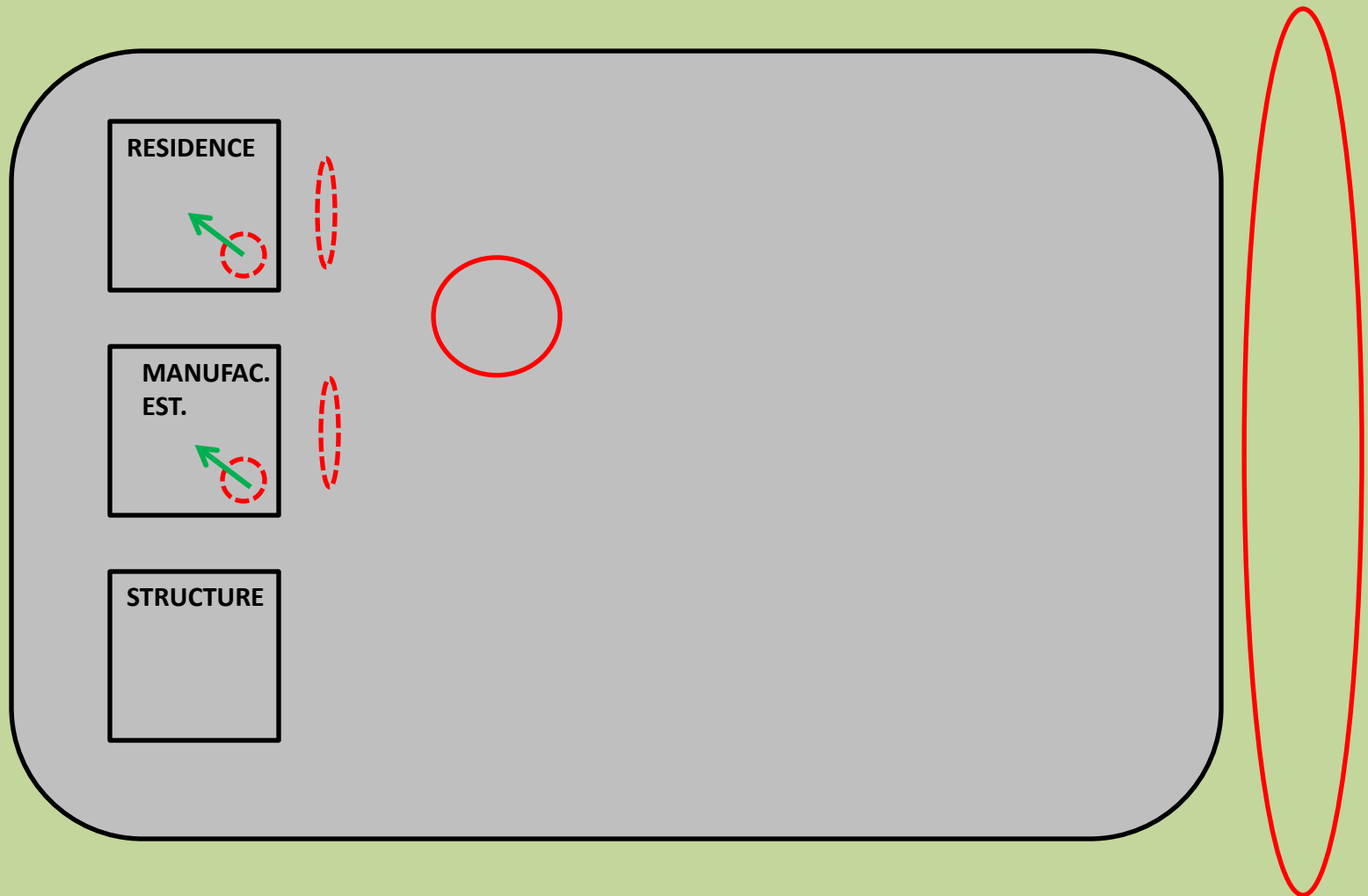


RECYCLING IN TOWNS 1



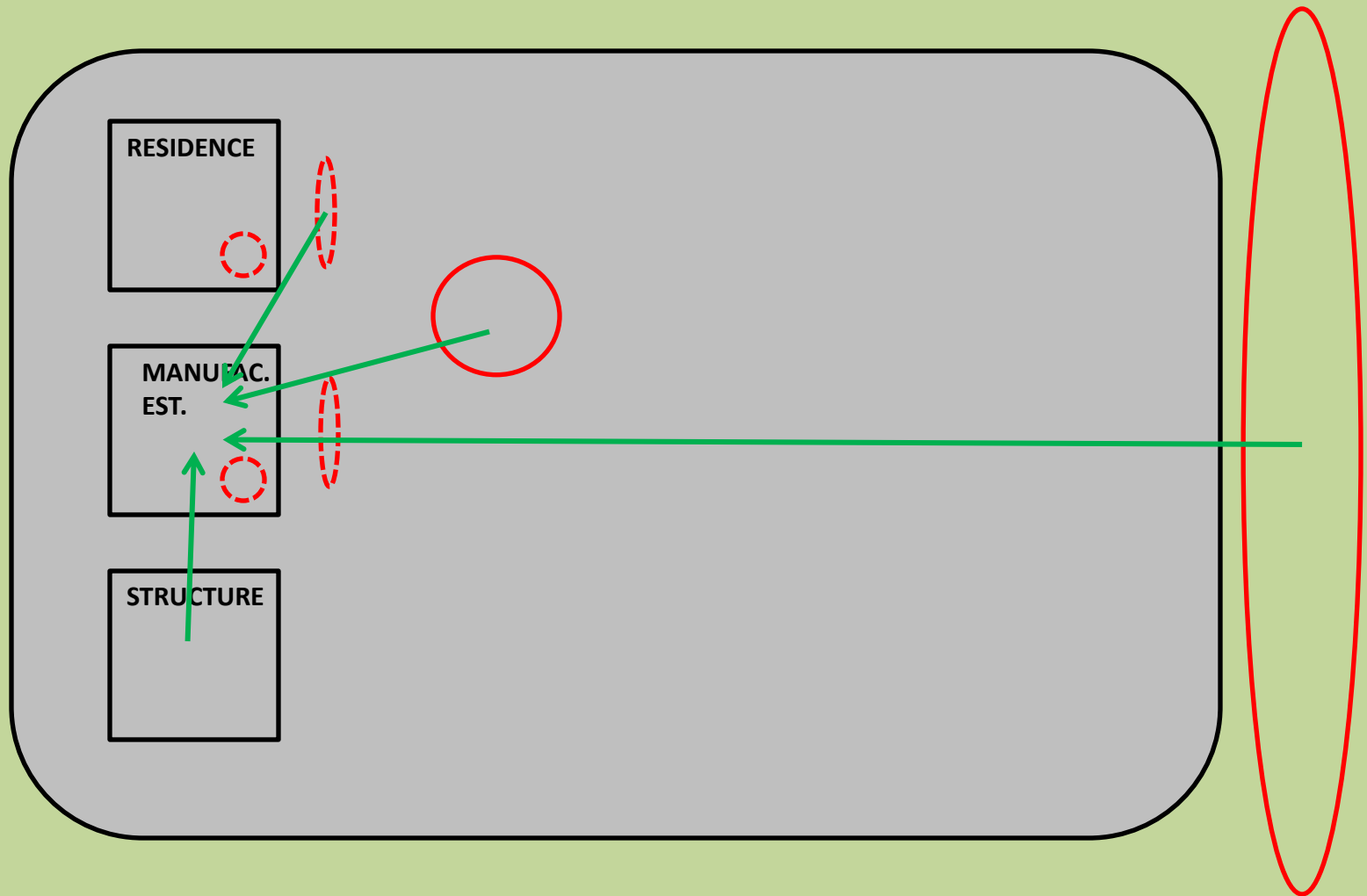
DISCARD BY RESIDENCES AND MANUFACTURING ESTABLISHMENTS

RECYCLING IN TOWNS 2



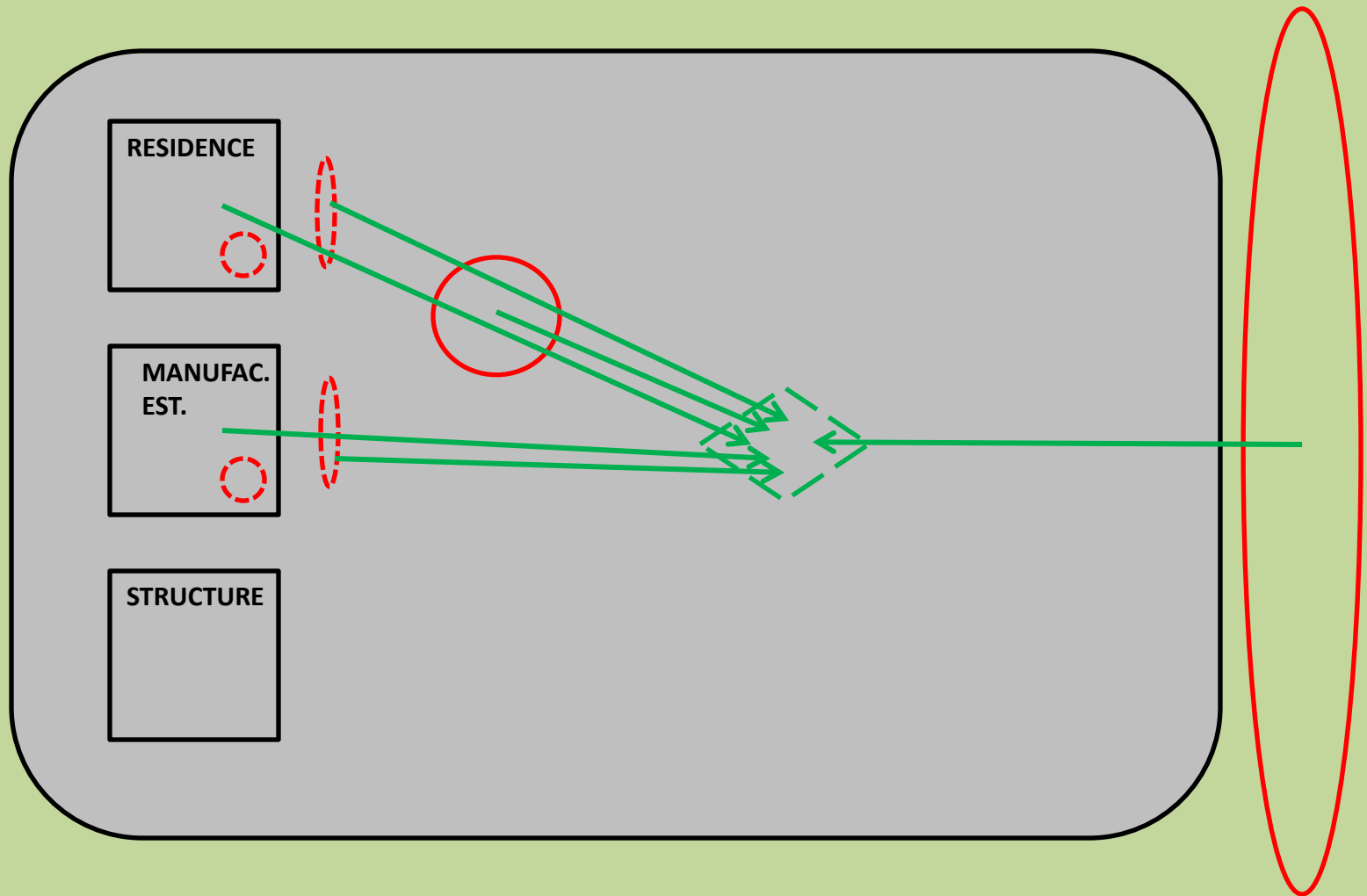
RECOVERY WITHIN RESIDENCES AND MANUFACTURING ESTABLISHMENTS

RECYCLING IN TOWNS 3



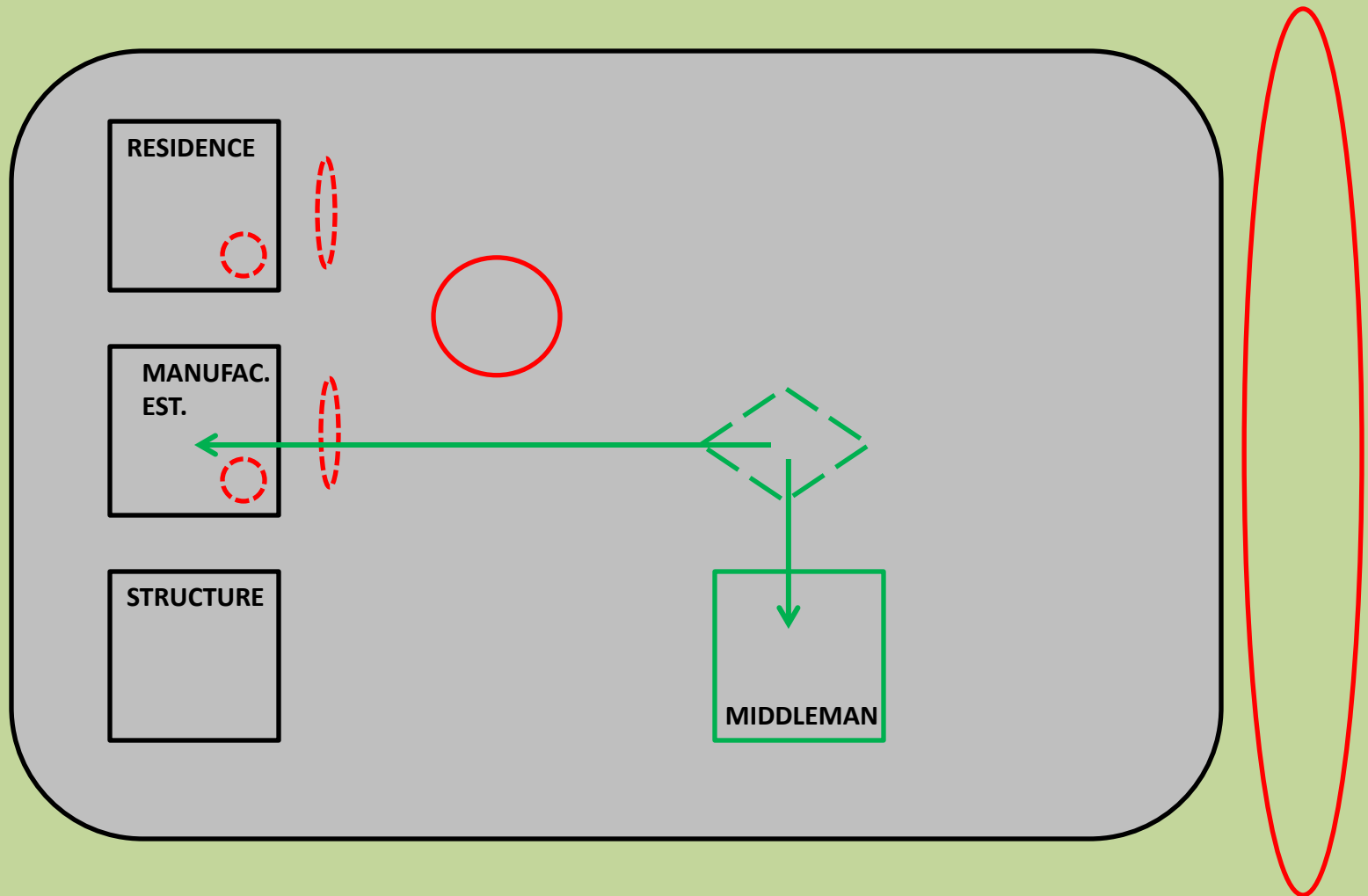
RECOVERY BY MANUFACTURING ESTABLISHMENTS

RECYCLING IN TOWNS 4A



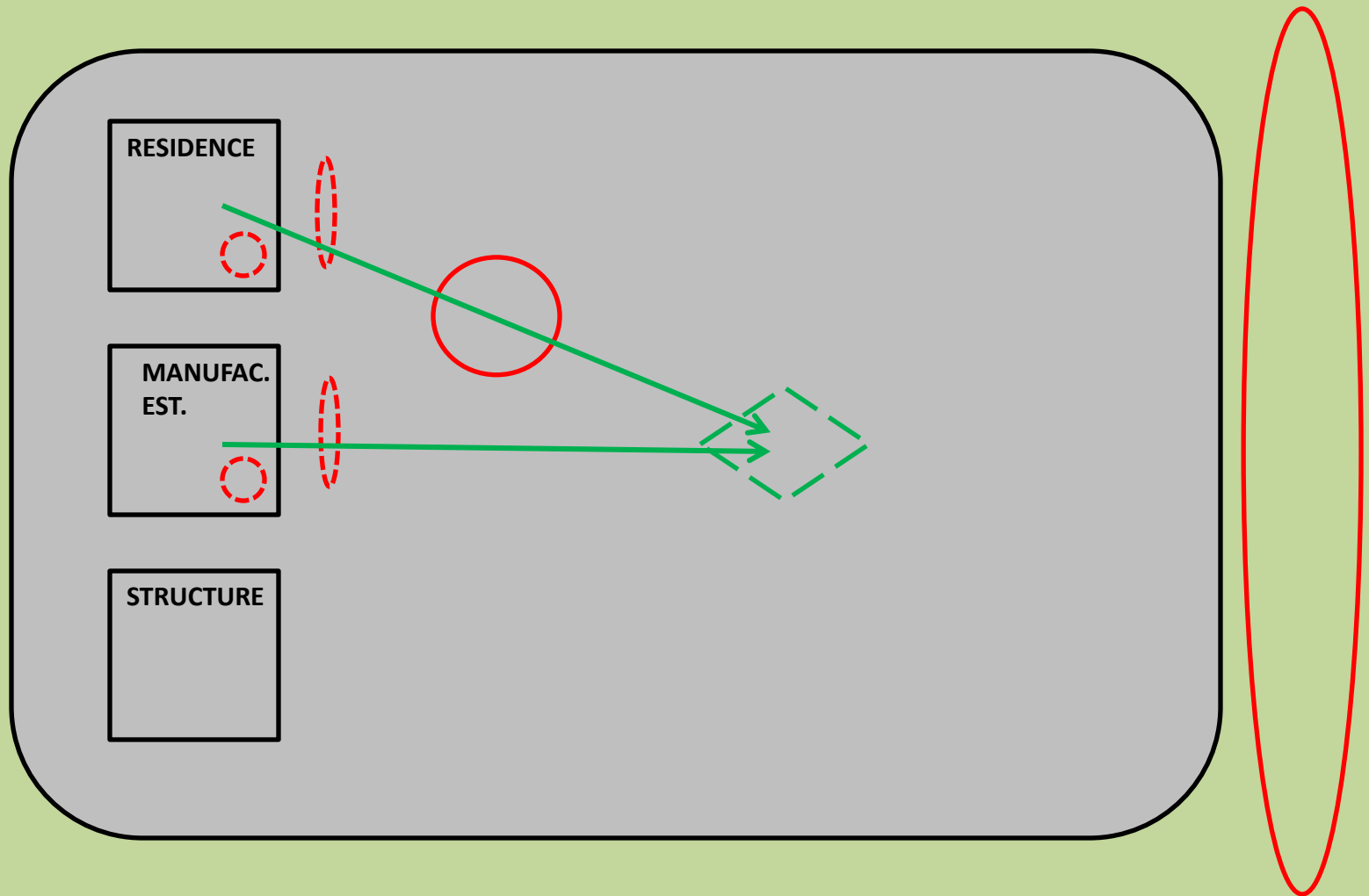
RECOVERY BY GENERAL WASTE PICKERS (E.G., *CENTONARII*)

RECYCLING IN TOWNS 4B



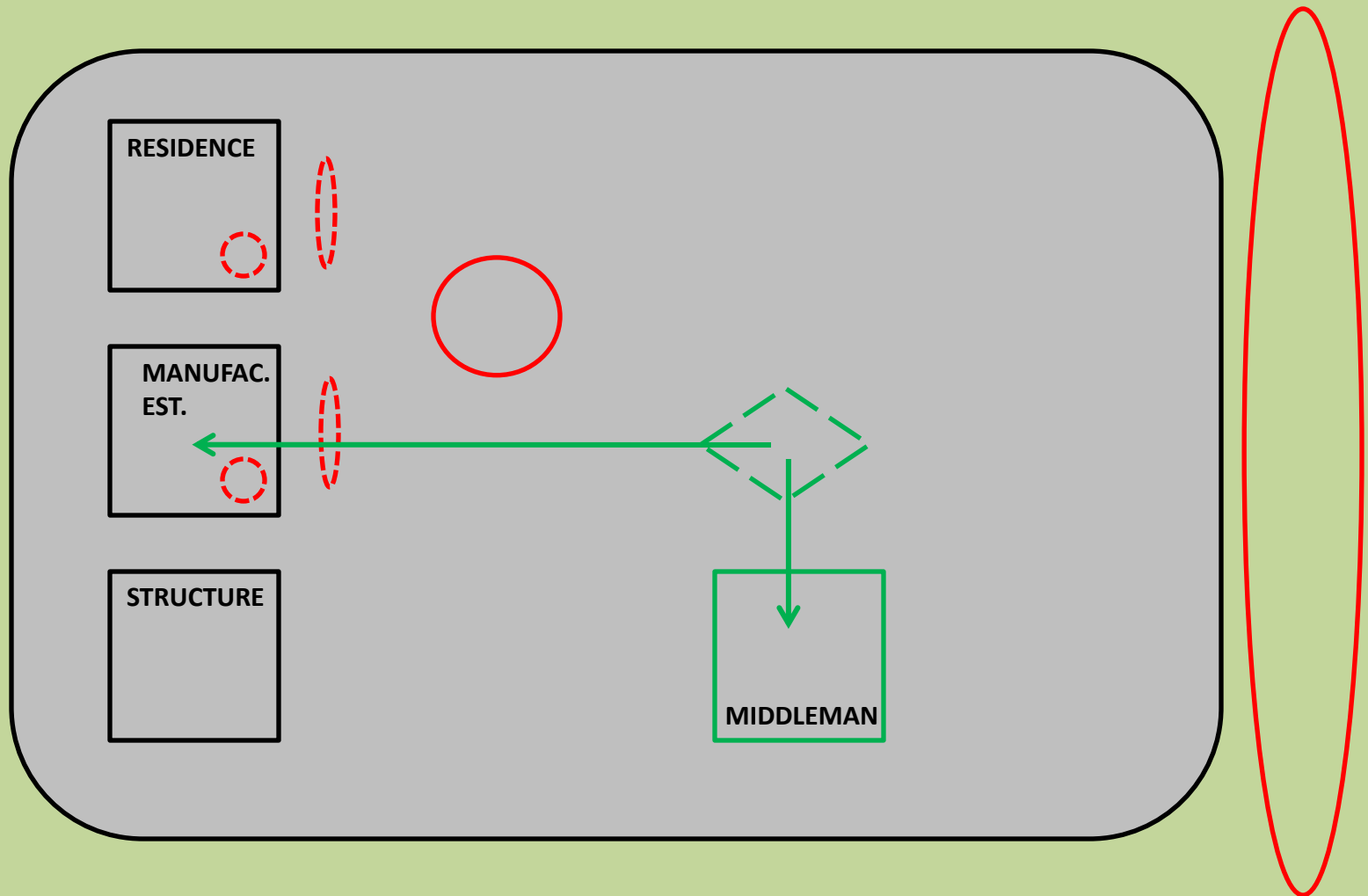
SUPPLY BY GENERAL WASTE PICKERS (E.G., *CENTONARII*)

RECYCLING IN TOWNS 5A



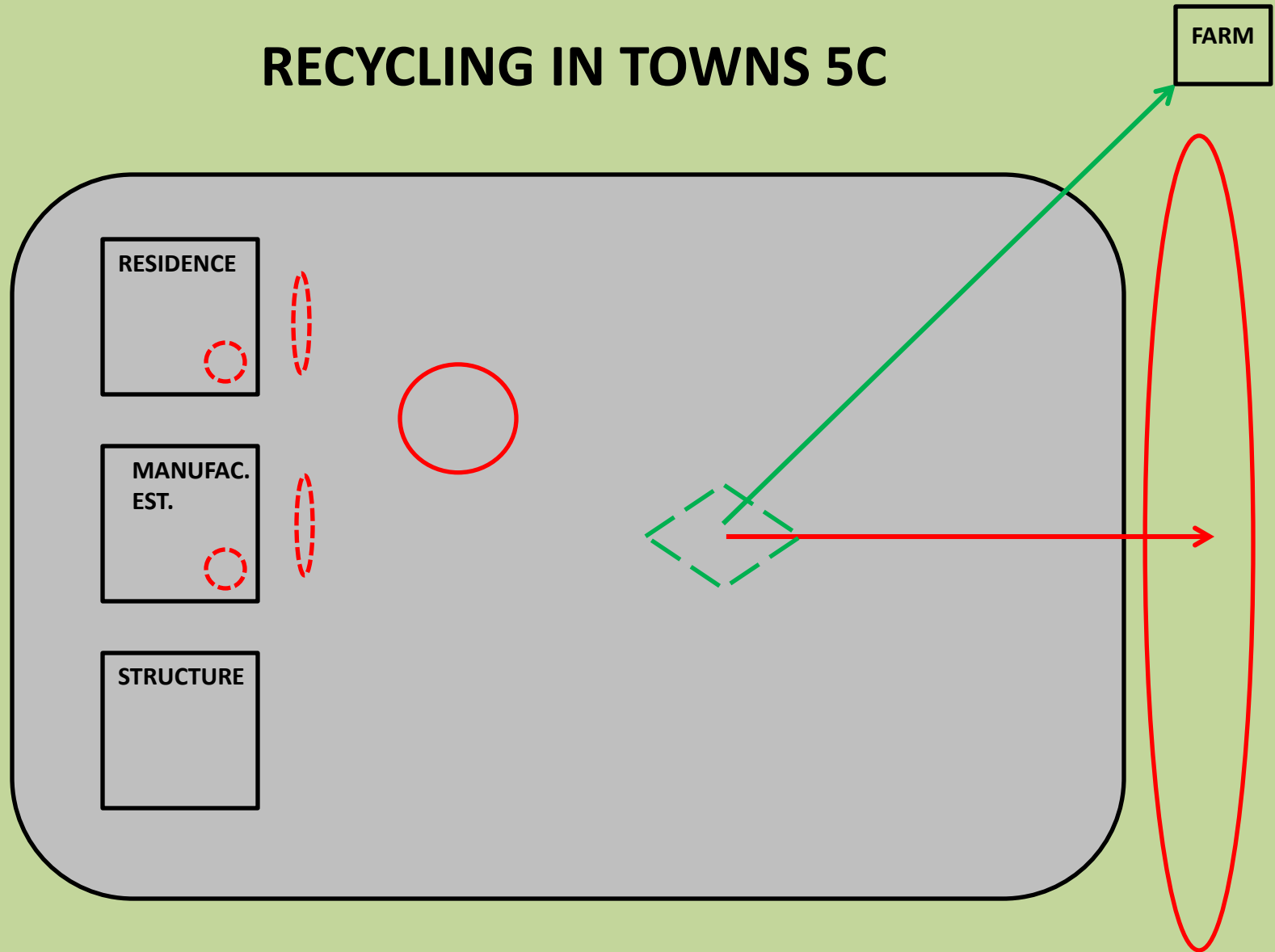
RECOVERY BY SPECIALIZED WASTE PICKERS

RECYCLING IN TOWNS 5B



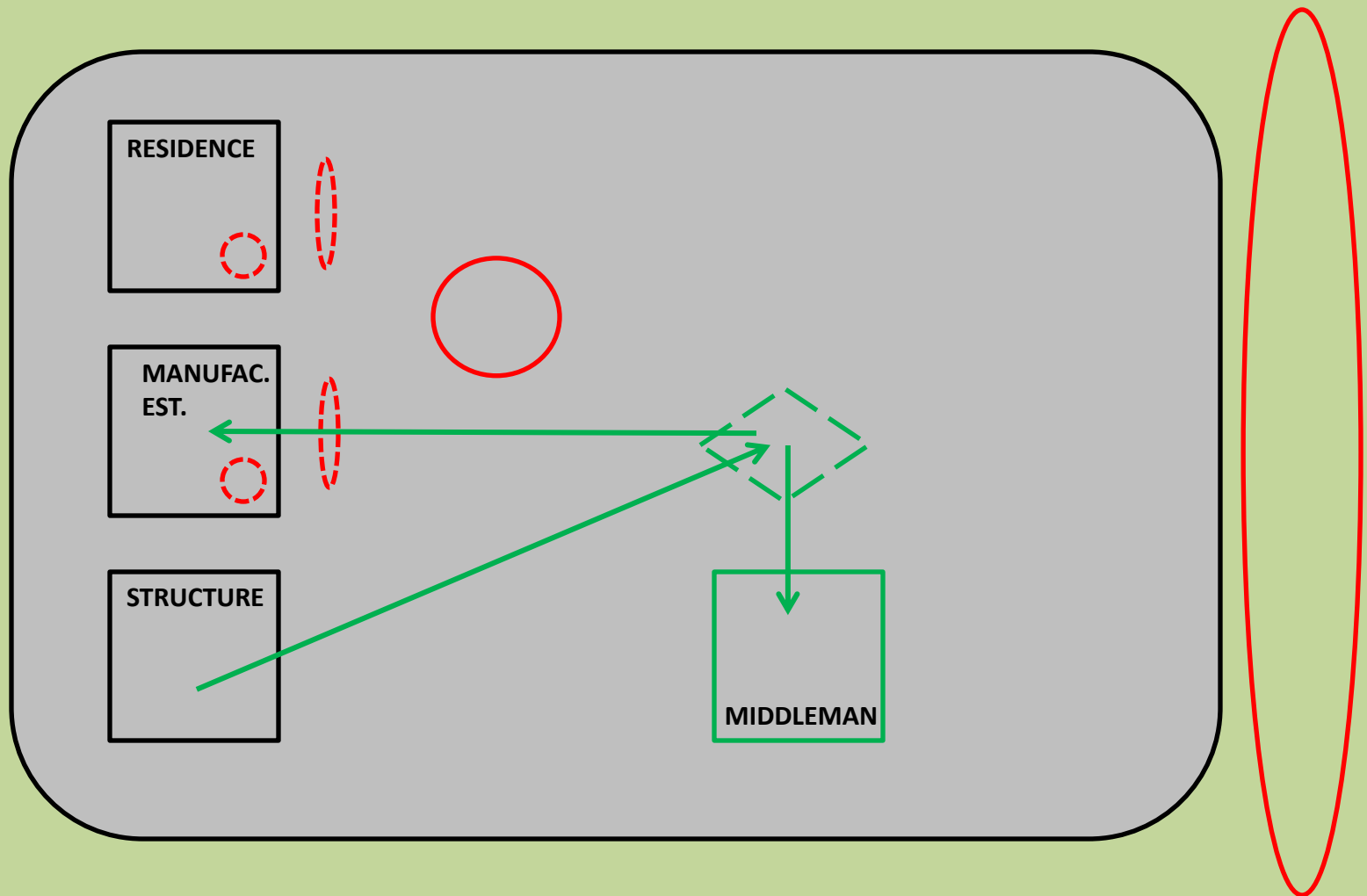
SUPPLY BY SPECIALIZED WASTE PICKERS (*AMBULATOIRES*)

RECYCLING IN TOWNS 5C



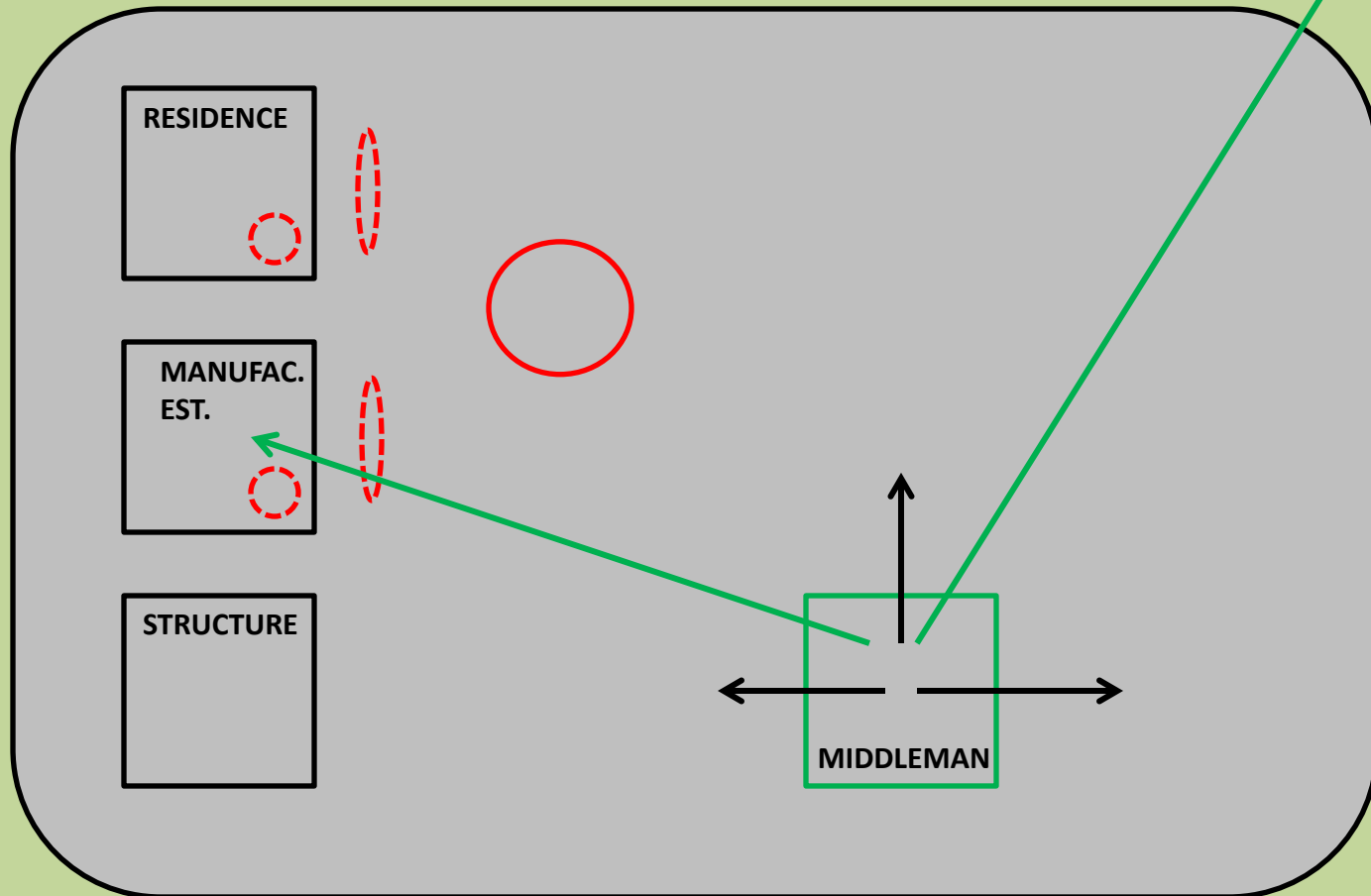
SUPPLY/DISCARD BY SPECIALIZED WASTE PICKERS (*STERCORARI*)

RECYCLING IN TOWNS 5D



RECOVERY/SUPPLY BY SPECIALIZED WASTE PICKERS (*SUBRUTORES*)

RECYCLING IN TOWNS 6



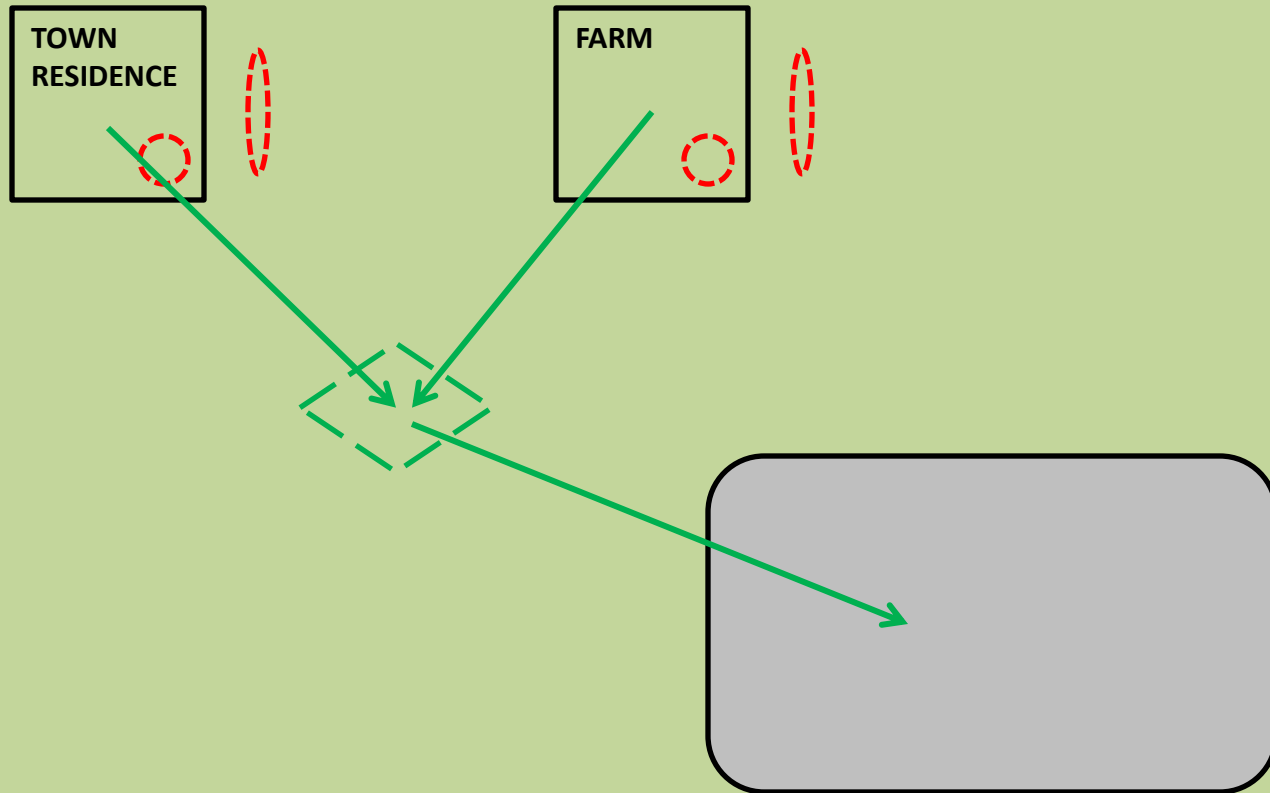
SUPPLY BY MIDDLEMEN

RECYCLING IN RURAL AREAS 1



RECOVERY WITHIN SMALL TOWN RESIDENCES AND FARMS

RECYCLING IN RURAL AREAS 2



RECOVERY/SUPPLY BY GENERAL/SPECIALIZED WASTE PICKERS

PALHIP

POMPEII

ARTIFACT

LIFE

HISTORY

PROJECT



RES ROMANAE:

University of California, Berkeley Roman Material Culture Laboratory

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WELCOME TO RES ROMANAE

RES ROMANAE is the website of the **University of California, Berkeley Roman Material Culture Laboratory (RMCL)**. Its principal purpose is to serve as a portal for reporting the results of the various research projects associated with the RMCL. It also reports on the research activities and presents the research results of the various scholars affiliated with the RMCL, including UC Berkeley faculty, graduate students, undergraduate students and external collaborators.

RES ROMANAE provides the following:

brief professional profiles of RMCL affiliates

a description of the RMCL facility

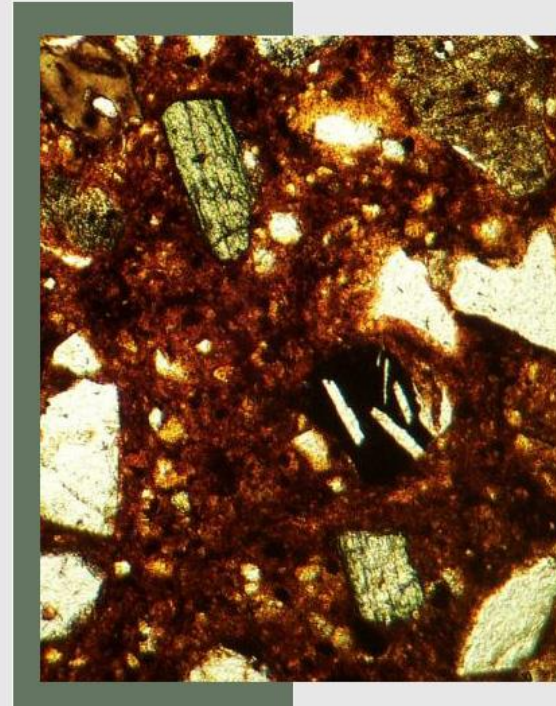
descriptions of the research projects associated with the RMCL and primary data generated by these initiatives, along with links to downloadable project-related documentation, datasets, publications, presentations and research tools

lists of scholarly products generated by RMCL affiliates, along with links to downloadable versions of many of these

links to resources on the UC Berkeley campus and beyond relevant to the study of Roman material culture

announcements about recent additions to the content of *RES ROMANAE*, the research activities of RMCL affiliates and events on the UC Berkeley campus relevant to the study of Roman material culture

information regarding how to contact the RMCL and how to make a financial contribution to support its activities.



<http://resromanae.berkeley.edu/>