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## Emerging Markets: Import Replacement in Roman North Africa

### Introduction

Import replacement, when a country or region begins to *produce* a capital or consumer good that it had previously *imported*, is an indicator of economic growth in pre-industrial societies (other drivers and symptoms of growth include urbanisation, division of labour, and mass-production). Import replacement enables growth in that it is not necessary for the continued functioning of a country's economy but, with autonomous production of previously imported goods, local demand still remains satisfied whilst local resources (i.e. land, labour and capital) are instead employed in the production of those goods<sup>1</sup>. A necessary feature of this process is technological change, and the accumulation of human capital (i.e. collective knowledge – the quality of the labour force is as much a factor as the quantity). The revenue released from importation costs can be ploughed into further production, generating a surplus that can then be traded, potentially on an international level – this is important as “exports facilitate employment of a country's most plentiful resources and the exploitation of any economies of scale”<sup>2</sup>. New and/or increased employment of under-used local resources implies greater Gross Domestic Product (GDP) overall, which, in the short term at least, implies greater productivity *per capita*. This paper contributes to the debate on *per capita* economic growth in the ancient world, by examining whether or not import replacement is visible in the archaeological record of Roman North Africa.

It will look at the North African littoral, as an import/export zone, and the hinterland landscape, as a zone that saw the development of intensive agricultural production. The following sites and surveys will be examined as case studies (fig. 1): Berenice/Benghazi in Libya, Kasserine-Cillium in Tunisia, Cherchel in Algeria; with supporting information from the Sitifis region, northern and central Tunisia, and the North African littoral. Increased primary production, i.e. agriculture, has been widely acknowledged as fuelling growth in secondary production, i.e. manufacture – a key feature of import replacement. Yet this paper will not be examining oil and grain output. We already understand that Africa produced and exported oil and grain *en masse*. These agricultural products were features of its economy well before the Roman Imperial period brought the intensive exploitation of the North African agricultural landscape. This paper will instead examine the production of wine, and the manufacture of North African finewares, in visualising import replacement.

<sup>1</sup> FANE 1973, 254.

<sup>2</sup> BRUTON 1998, 924; AHMAD 1976, 287–288 provides an excellent discussion of this process.



Fig. 1 – Sites featured within the paper (K. Heslin, created using Google Earth ©).

### **Wine Importation**

Wine was certainly produced in pre-Roman North Africa. As well as a range of imported amphorae found at coastal Punic sites dating from the eighth century BC, corresponding exported amphorae from North Africa have been discovered at *Pithecussai* and on *Sardinia*, and an amphora kiln dating to the seventh century BC has also been found within Carthage itself<sup>3</sup>. Later literary sources, including *Diodorus Siculus* (XX, 8, 4) and *Polybius* (I, 29, 7) also attest that, by the start of the Hellenistic period, arboriculture was well developed in the northern and coastal regions of Tunisia – Cap Bon was said to be richly cultivated with vines<sup>4</sup>. Given this previous cultivation as a primary product, why should we be looking at wine with regard to import replacement? Largely because in the Roman imperial period it appears that, following coastal importation and production, the movement in wine production across the North African landscape appears to spread from established coastal cultivation to new hinterland production in the wake of intensive agricultural development.

Evidence for early wine imports can be seen in several coastal locations – Cherchel, Cap Bon, Benghazi, and Carthage – and in several different types of amphorae (including Latian/Campanian Dressel 1Bs, Baetican Haltern 70s, and Italian and Tarraconensian types dating to the first centuries BC to AD). One of the clearest demonstrations of the mixed nature of wine imports in the early Imperial period comes from the First and Second Amphorae Walls of Carthage, where imported amphorae were used to shore the sides of the walls, assisting drainage and stabilising the soil. Each wall was constructed of c. 2000 amphorae; Wall 1 represents the most closely dated Early Roman amphorae context known, with a *terminus post quem* of 15 BC, and a consular stamp dating to 43 BC; Wall 2 dates to c. AD 25 – 50. Of those amphorae from the walls studied by FREED, 70% had *tituli picti* or stamps relating to wine as their contents, and a large number were pitched, suggesting the same<sup>5</sup>. Campanian imports prevailed here until the early first century AD, when they

<sup>3</sup> BRUN 2004b, 187.

<sup>4</sup> *Ibid.*, 187.

<sup>5</sup> FREED, 119–120.

were edged out by Tarraconensian Dressel 2 amphorae. These contexts suggest a fair dependence on imported wine, at least at the beginning. Interestingly, it appears that all amphorae here are foreign imports, in contrast with the later harbour-side contexts of the first to third centuries AD, in which c. 81% of amphorae were of regional African origin<sup>6</sup>.

### **Wine Production**

Evidence of local imperial-period wine production is harder to trace, although a number of literary and epigraphic sources note some form of hinterland vine cultivation. From the literary sources, for instance, *Strabo* (XVII 3.4) notes that the vine was largely cultivated in Mauretania<sup>7</sup>. From the frontier zone of inland Numidia we have the Zarái tariff of the second century that places a tax on *vinum cibarium*, an ordinary wine that surely has to be of local origin<sup>8</sup>. A list of fines (CIL VIII 14638) from Chemtou (Tunisia) states that certain misdemeanours could be paid for in amphorae of wine, as highlighted below, which again must have been of local origin<sup>9</sup>:

*A in antica:*

CVRIA . IOVIS . ACTA  
V . K . DECEMBRES  
MATERNO . ET . Attico COS  
NATALE . CIVITATIS . QVOT  
BONVM . FAVSVM . FELICEM  
PLACVIT INTER EIS ET CONVE  
NIT SECVNDVM dECRETVM  
PVBLICVM oBsERVARE  
SI QVIS FLAMen eSSE VOLVERit  
**D D VINI AMP III P**  
PANE ET SALE ET CII  
SI QVIS MAGISTER  
**VINI AMP II**  
**d D X II**

*B in latere dextro:*

SI QVIS FLAMINI MALEDIXERIT  
AVT MANVS INIECERTI D D X Iii  
SI MAVISTER QVESTORI IMPe  
RAVERIT ET NON FECERIT **D D**  
**VINI AMP** SI IN CONCILIVM  
PRESENS NON VENERIT D D C  
SI QVESTOR ALICVI NON Nu  
NTIAVERIT D D X I SI A  
DE ORDINE DECESSerit

In addition, the second century AD Mausoleum of the *Flavii* at Kasserine (CIL VIII.212) celebrates the plantation and irrigation of vines<sup>10</sup>. This monument is especially important as it records rising agricultural investment in a hinterland region:

He has the pleasure of contemplating the gifts that he himself made formerly for the happiness of this place; he introduced there in profusion the gifts of *Bacchus*, he saw fit to plant the first vine in rows and showed off the groves of trees to best effect by means of streams of running water<sup>11</sup>.

That increased interior production was encouraged can also be seen in the institutional incentives of the second century, including the *lex Manciana* and *lex Hadriana de rudibus agris* – laws which exempted tenants from land rents and taxes until their newly-planted trees reached maturity, coming into fruition (five

<sup>6</sup> HURST *ET AL.* 1984, 97.

<sup>7</sup> BRUN 2004a, 188, 232.

<sup>8</sup> CAGNAT 1914, 143–146.

<sup>9</sup> BRUN 2004a, 201 n. 43.

<sup>10</sup> See WILSON, this session, for a detailed discussion of the monument.

<sup>11</sup> Translation: DAVIES 1999, 222.

years in the case of vines, and ten years for olive trees)<sup>12</sup>. This exemption only applied if settlement brought unused or marginal land under cultivation. Such laws encouraged tenant farmers to make a long-term commitment to and investment in the land, securing stable and predictable revenues; for such contracts provided for hereditary settlement and meant that there was no alternative use for the land but to farm it.

Known press sites of North Africa further point to the potential development of the landscape throughout the Imperial Period, although the evidence is complicated. In the Tripolitanian pre-desert, the buildings of Wadi el-Amud (Lamout), specifically farm building E of LM4 (later a fortified farm, LM3)<sup>13</sup>, were considered by their excavators to be for oil processing; this theory was based on a secondary tank in building E, located in the press room, which would have allowed water to flow into the main tank, to mix with and separate the olive oil<sup>14</sup>. BRUN, however, has recently reinterpreted these remains as being for wine production – deduced largely from the treading basins on the press floors, and from sampling carried out at LM4E that revealed only 24 olive pits, but c. 200 grape pips<sup>15</sup>. Of these pips, 98 came from the earlier c. first to third century period – 26 carbonised, and 72 desiccated; 132 came from the later post third century period – 41 carbonised and 71 desiccated<sup>16</sup>. The excavators had also pointed out the lack of an olive mill, or indeed space for such a mill<sup>17</sup>. The site plans also show that the main tank actually decanted via a spout into room 5 – a storage room whose floor preserved 30 impressions of amphorae, potentially denoting it as a fermentation room<sup>18</sup>. This evidence suggests that, in all likelihood, this building was part of a winery.

The fourth-century AD site of the Propriété Belgica (26km from Sfax, Tunisia) was also likely to have produced wine – it had three long basins, lined with hydraulic mortar (their ‘exaggerated dimensions making them favourable for treading’)<sup>19</sup>, which then emptied into 10 smaller fermentation vats. Each vat held around 25hl, giving totally production capacity of 250hl. If wine was produced here, BRUN notes that the production capacity of these vats thus implies a winery of around 4-7 hectares<sup>20</sup>.

Overall, Numidia has the best evidence for wine production on a grand scale. The largest winery in the ancient world is visible at Kherbet Agoub, 4km from Satafis, dating to the second or third century AD, with at least 21 pressing installations comprised of pairs of treading floors, and related press-platforms with counterweights. The building measured c. 40m x 29m, and was part of a vast ensemble covering more than a hectare<sup>21</sup>. There are other surrounding buildings/farms whose output is called into question by BRUN – including Kherba, Kherbet Er-R’ihba (20km away), and a villa at El Haïtane. Other Numidian wine producers may include a villa at Tipasa (c. AD 239 – where 2 treading platforms above a great vat were found) and at Nador (a fourth century site, with a press room that contained two large vats, and a neighbouring room containing 17 *dolia defossa*, normally employed for the fermentation of wine)<sup>22</sup>. BRUN has suggested that this entire region specialised, during the third and fourth centuries, in the production of wine, which then came to be exported in the Dressel 30 amphorae of *Mauretania Caesarea*, to be discussed shortly<sup>23</sup>. The potential volume of production at these sites would thus point to a satisfaction of local and regional wine consumption requirements, and beyond.

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<sup>12</sup> KEHOE 1988, 28.

<sup>13</sup> BARKER, JONES 1984.

<sup>14</sup> *Ibid.* 17.

<sup>15</sup> BRUN 2004a, 196.

<sup>16</sup> VAN DER VEEN 1985, 21, table 1. There were 5 carbonised olive pits, and 19 desiccated olive pits, all dating to the earlier period of the building’s use.

<sup>17</sup> *Ibid.* 18.

<sup>18</sup> See BARKER, JONES 1984, figure 9.

<sup>19</sup> POINSSOT 1936, 146; POINSSOT, commenting on the excavations, would not confidently state that it was an oil pressing establishment.

<sup>20</sup> BRUN 2004a, 203; POINSSOT 1936, 145.

<sup>21</sup> BRUN 2004a, 233.

<sup>22</sup> *Ibid.* 239, 243.

<sup>23</sup> *Ibid.* 238.

### **Wine Production Related to Amphorae**

An additional method of tracing increased production in the archaeological record can also be developed using the African amphorae series. A greater spread of viticulture can perhaps be visualised in tandem with the spread of amphorae production sites, from coastal into hinterland areas. From Tripolitania, wine production was sufficiently important for wine to have been exported in traditional Punic amphora, and – above all – in African Dressel 2-4s of a type identified at *Ostia*, *Pompeii*, Naples, and *Pupput*<sup>24</sup>. The kilns of Jerba and Zitha in southern Tunisia produced African versions of Dressel 2-4 amphorae between the first centuries BC and AD. Their imitative shape suggests that they contained wine, again most likely locally produced; the kilns of Jerba, for example, are all located far away from the sea, and no fish-salting vats – another product possibly contained in the amphorae – were identified by the area survey, thus discounting *garum* and *salsamenta* production<sup>25</sup>.

From the 30s AD, Mau 35 amphorae – a closer but smaller imitation of the Dressel 2-4 series – were also produced at the kilns of Jerba, until the late second or early third century, as well as at Zitha, and at the extensive kiln complex of Gargaresh (near Tripoli, Libya) until the mid second century<sup>26</sup>. Mau 35 amphorae achieved a widespread distribution, and have been found at Pompeii, Rome and *Ostia*<sup>27</sup>. Both of these imitation-style wine amphorae types mimic that which happened in first century AD Gaul, where the Lyon Dressel 2-4 series were produced in the Italian style from local clay, possibly to decant wine arriving in bulk at the Lyons *entrepôt*<sup>28</sup>. Packaging wine in similar containers to already-known wine amphorae types was not necessarily done to fool the consumer (e.g. to pass table wine as vintage) – it may be that it was a nod to familiarity of content, much as wine and milk bottles are recognisably different shapes today.

The increasing size of African wine amphorae should also point to increased wine production, perhaps even wine of lesser quality, produced and transported in bulk (as may have occurred with the shipment of wine *en masse* in *dolia*-ships, a transport phenomenon dating to a similar time period)<sup>29</sup>. By the second century AD, Gargaresh went on to manufacture the Tripolitanian II series, as did Sidi as Sid, Ain Scersiara, and Acholla on the Tunisian coast<sup>30</sup>. These massive amphorae, with a capacity of 80-85L on average<sup>31</sup>, are suspected to have contained wine as pitched versions have been found at the ports of Toulon and Fos. They have a mainly Western distribution, including within North Africa (with examples coming from Tripolitania, including at *Leptis Magna* and *Misurata*, and from Tunisia, at *Pupput*), as well as from Israel (at *Atlit*), Spain (at *Tarragona* and *Empúries*), across the south of France, and from Italy (occurring at *Ostia* and Rome)<sup>32</sup>.

Increased amphorae distribution and typologies should also be concurrent with increased wine production. Several potential African wine amphorae were produced over the second century BC to the seventh century AD, including the Hammamet 1-3 types, and Keay 25 types<sup>33</sup>. Amphorae of the type pictured in the mosaic from *statio 48, Piazzale delle Corporazioni, Ostia* (and stamped M. C. – *Mauretania Caesarea* – as seen in fig. 2) have been found in Libya and France, as well as *Pupput*. The French version is pitched, which furthers the idea that viticultural production sites existed in *Mauretania Caesarea*<sup>34</sup>. By the third century AD, we see the widespread appearance of the Dressel 30 series<sup>35</sup>. Their production is attested

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<sup>24</sup> BONIFAY 2004, 24–26.

<sup>25</sup> Kilns, contents: FENTRESS 2001, 262; Forms: BONIFAY, 2004, 29.

<sup>26</sup> BONIFAY 2004, 29.

<sup>27</sup> BRUN 2004a, 197.

<sup>28</sup> HESLIN forthcoming. See also DESBAT 2003, 45–46; DANGRÉAUX *ET AL.* 1992, 39, 45–48; TCHERNIA 1997, 124.

<sup>29</sup> See HESLIN forthcoming.

<sup>30</sup> PEACOCK *ET AL.* 1990, 61.

<sup>31</sup> BONIFAY 2004, 470.

<sup>32</sup> Details from [http://ads.ahds.ac.uk/catalogue/archive/amphora\\_ahrb\\_2005/details.cfm?id=305](http://ads.ahds.ac.uk/catalogue/archive/amphora_ahrb_2005/details.cfm?id=305). See BONIFAY 2004.

<sup>33</sup> BONIFAY 2004.

<sup>34</sup> BEN ABED-BEN KHADER *ET AL.* 1999, 172.

<sup>35</sup> These appear to mimic Gauloise 4 amphorae – originally thought to be oil amphorae but the discovery of shipwrecks containing pitched Dressel 30s has led to their re-evaluation as wine amphorae. BRUN 2004a, 202 n.45, 232–233; BONIFAY 2004. See also:



Fig. 2 – Amphorae from *statio* 48, *Ostia* (reproduced with kind permission of the *Soprintendenza di Ostia*).

at Nabeul and El Assa (Cap Bon), in northern Tunisia, and at Salakta in southern Tunisia<sup>36</sup>. Those produced in Tunisia achieved a fairly local distribution. The amphorae found in the necropolis of *Pupput*, for example, were of non-local production but were sourced from North Africa (originating from Nabeul, *Hadrumentum*, *Leptiminis* and Salakta), demonstrating that these products were an object of African commerce in themselves<sup>37</sup>. Those produced in *Mauretania Caesariensis* achieved a wide, if sparse, distribution across the Western Mediterranean – from the third and fourth centuries, we find these amphorae in Spain, Gaul, Italy, Greece, Tripolitania and Egypt.

The evidence from imports, production sites and amphorae, suggests that African wine production increased over the first few centuries AD, continuing on in the third and fourth centuries to achieve moderate exportation overseas. Production sites of both wine and amphorae extend from the Punic then Roman coastal regions into the hinterland as well, and imperial period institutional incentives encouraged greater exploitation of the landscape. The potential for continuing, or increased, wine importation is masked, however, by concurrent developments in Mediterranean shipping – such as the *dolia* ships noted earlier – which may have distorted the data somewhat. In addition, and perhaps more importantly, barrels as containers began to appear from the first century BC. Several barrels survive primarily as well-linings in the northern provinces, and iconographic representation comes in the form of barrel-shaped grave *stelae* from Portugal, France, and Germany, and from *stelae* which depict barrels being carried down-river by barges<sup>38</sup>. By the first century AD we witness the enlargement of vine-cultivating areas within the Empire<sup>39</sup>, and the growth of the large wine-production centres in France<sup>40</sup>. Around the same period, barrels achieved increased distribution – concurrent with diminished levels of Italian Dressel 2-4 and Gauloise 4 amphorae in the archaeological record<sup>41</sup>.

[http://ads.ahds.ac.uk/catalogue/archive/amphora\\_ahrb\\_2005/details.cfm?id=108](http://ads.ahds.ac.uk/catalogue/archive/amphora_ahrb_2005/details.cfm?id=108). Also note: BEN ABED-BEN KHADER *ET AL.* 1999, 169–175.

<sup>36</sup> BONIFAY 2004, 40.

<sup>37</sup> *Ibid.* 449–450. See also BEN KHADER, GRIESHEIMER 2004, 22 which lists the foreign amphorae discovered in the *Pupput* necropolis.

<sup>38</sup> MARLIERE 2002, 124–156.

<sup>39</sup> HESNARD 1997.

<sup>40</sup> MARLIERE 2002, 177, 182.

<sup>41</sup> TCHERNIA 1997.



Fig. 3 – Fresco of a glass vendor, now lost (reproduced with kind permission of the Bardo Museum, Tunis, Tunisia). The Author would like to thank Miss Katia Schörle for bringing this fresco to her attention.

If barrels became an important container for the Mediterranean, it may be that wine imports are going unrecorded. The harbour-side Carthage assemblages drop from a concentration of 90% amphorae to 67% amphorae between the first century BC and the late second century AD<sup>42</sup> – could this be a result of barrel importation? A second century fresco from Sousse, Tunisia – a major port city and import centre – shows a familiarity with this type of container (fig. 3). Africa had no suitable timber for autonomous barrel production (barrels require planks of straight timbers, such as fir or pine, rather than of the twisty olivewood available in North Africa), and is thus more likely to have exported her wine in clay containers. Overall therefore, we may instead be seeing increased wine production Mediterranean-wide, with increasing numbers of African wine amphorae mimicking the increased volume of wine production by other provinces carried in other containers, rather than simple import replacement.

To visualise import replacement, therefore, we should also look at evidence of secondary manufacture, to judge whether it follows similar patterns of import, production, and export – for growth in secondary industries occurs largely as a result of expanded primary production.

<sup>42</sup> HURST *ET AL.* 1984, 97.

### Africa and Finewares: Italian Terra Sigillata Importation

As we have seen from RICE's paper<sup>43</sup>, at the start of the imperial period Italian and Gallic *terra sigillata* (ITS and GTS respectively) was exported to North African sites with varying degrees of regional popularity (importation began in *Mauretania Caesarea* and spread). Guéry, for example, showed that a large percentage of stamped pottery from the Arretine workshops was exported to North Africa in comparison with other Western and Eastern Mediterranean provinces – one-sixth of all 1219 stamps that he investigated came from Algeria, Tunisia or Libya (fig. 4),

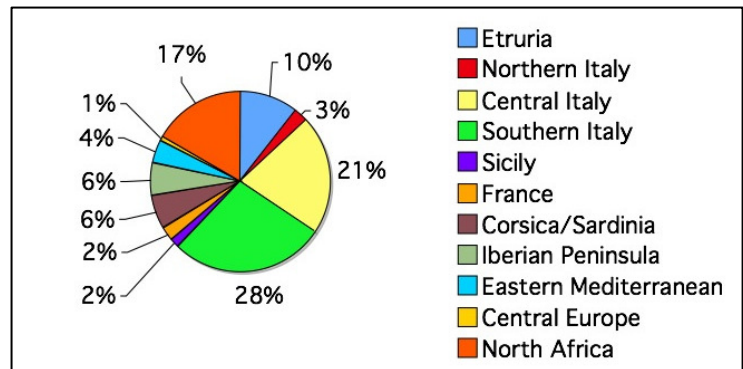


Fig. 4 – Stamped Arretine pottery distribution (K. Heslin, after GUÉRY 1987, 150, table 5).

the largest figure after the combined Italian distribution. Of the four potters that GUÉRY considers – L.R.P, S.M.F, C.P.P. and S.M.P., 127 stamps came from Etruria, 33 from Northern Italy, 259 from Central Italy, 339 from Southern Italy, 21 from Sicily, 30 from France, 75 from Corsica/ Sardinia, 72 from the Iberian peninsula, 50 from the Eastern Mediterranean, 9 from Central Europe, and 204 from North Africa<sup>44</sup>.

*Terra sigillata* imports, whilst prevalent in the early first-century AD, virtually ceased after AD 80, when production of local African Red Slip ware became established<sup>45</sup>. In the Carthage levels, for example, quantification of the finewares shows a shift from Campanian black gloss wares at 25% in the first century BC, to ITS at 49% in the first century AD, before this in turn is replaced in the second century AD by African Red Slip ware (ARS)<sup>46</sup>.

### African Red Slip Ware: Local Production

Unfortunately, we often have only scarce testimony of north Tunisian centres of production – for instance at Bordj el Djerbi, Henchir el Kebir, and Sidi Khalifa<sup>47</sup>. However, HAYES has proposed that production of ARS commenced in the Carthage and North Tunisian region, to be supplied intra-provincially, largely because the sheer amount of sherds known from this area displayed high consistency in their fabric and form<sup>48</sup>. In addition, much greater quantities of closed-vessel forms occur in this region – it appears that they were not as freely exported (perhaps due to reasons of bulkiness), again suggesting production commenced in this locale<sup>49</sup>. The earliest ARS production largely imitated ITS but the designs progressed with time, adopting lower feet, curving floors, and simplified decoration, all of which rendered the vessels easier to manufacture *en masse*. For instance, Hayes form 4 is modelled on the Gaulish Dragendorff form 15/17, and Hayes form 5 is modelled on the Italian Dragendorff 18<sup>50</sup>. Importation still occurs at this point – in Tunisia, a few more GTS signed pieces appear towards the end of the first century AD, and there are some weak levels of importation in *Mauretania Caesarea* and Numidia in the second century AD, which seem to die out by c. AD 120. This point also marks the end of the La Graufesenque kilns – a large proportion of GTS

<sup>43</sup> RICE, this session.

<sup>44</sup> GUÉRY 1987, 150, table 5.

<sup>45</sup> HAYES 1972, 414.

<sup>46</sup> RICE, this session.

<sup>47</sup> TORTORELLA 1995, 82.

<sup>48</sup> HAYES 1972, 296.

<sup>49</sup> *Ibid.* 296. Also see HAYES 1972, 297–299 for a discussion of potential ARS production locations.

<sup>50</sup> *Ibid.* 15.



in Algeria is produced by La Graufesenque, as shown by surviving stamps, so there may be a link between these phenomena<sup>51</sup>.

Definitive proof of the appearance of the first forms of ARS from the end of the first century AD comes from the necropoleis of *Tipasa* and *Sétif*<sup>52</sup>. Many of the new forms were flat, making them easier to stack and ship in bulk. By the second century, in tandem with the severely diminished imports of ITS, the influence of the *terra sigillata* styles ended, and ARS forms became autonomous (see, for instance, Hayes forms 27, 29-33, and 43-4)<sup>53</sup>. The fashion changed at this point to bowls, with broad flat floors, and roulette decoration on the interior. By the early third century, finer styles appear and average vessel size increases. Local production predominantly took over from importation. The urban kilns of *Leptiminus*, for instance, produced finewares including plates and covers (Hayes 181 and 182) from the second century onwards, peaking in the third century AD. Survey here beyond the central urban area recovered 454 sherds of ARS 181 and 956 sherds of ARS 182 (Hayes type) – they seemed to cluster in the fields southeast of the amphitheatre, with 150 alone recovered from field 83. The over-fired condition of the sherds suggests the presence of a kiln in the immediate hinterland<sup>54</sup>.

Inasmuch as the lines of importation of ITS and other finewares depended on the location of the coastal importation centres, the intra-provincial circulation of the new African ceramics depended largely on the location of both coastal and hinterland centres of production<sup>55</sup>. Within Tunisia, studies of regional sherd distribution patterns show increasing localised production following contact with the north-Tunisian production centres. In the first century AD, several ARS forms were being imported into the Kasserine area from the Carthage region (these included Hayes forms 3, 4, 5, 6, 8, 21, 22, 23, 26, 27, 181 and 182)<sup>56</sup>. Forms 4, 5, and 6 seem to be the most prolific, as is the case with most Tunisian sites at this point<sup>57</sup>. Only one sherd of ITS came from the survey carried out here<sup>58</sup>. Imitation Hayes 181 vessels then appear in local fabrics, suggesting that local or regional production of finewares began by the second century AD<sup>59</sup>. By the third century, the direction of importation shifts away from the northern-Carthage region wares, and begins to concentrate on production from the east-central Tunisian workshops, including Hayes forms 45, 50 and 58 – local production also increases, and Hayes 45 especially receives a wide imitation<sup>60</sup>.

By the late third/early fourth centuries, there were at least two main local Kasserine wares, from Henchir-es-Srira and Sidi Aïch, (Henchir-es-Srira is 17km NE of Hadjeb el Ajoun, Sidi Aïch is the ancient site of Vicus Gemellae, 10km N. of Gafsa – see fig. 5)<sup>61</sup>. These wares seem to have primarily catered to local markets, although they also diffused throughout the east of Tripolitania, and in the western region of Byzacene and Numidia. Standard vessel forms are those dishes and plates related to ARS forms 48, 50 and 61<sup>62</sup>. Versions of ARS 68 are also produced here, as well as at Kasserine, although these again are of entirely local fabrics – the Henchir-es-Srira fabric was a matte orangey-yellow pottery which had fewer inclusions and was made of finer clay than that of Sidi Aïch, which is generally of thicker, coarser fabric<sup>63</sup>. Of the vessels from Henchir-es-Srira, 9 of the 17 types are of purely local distribution. Of the vessels from Sidi Aïch, 25 of the 33 types are found only locally, with the remainder achieving a moderate regional

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<sup>51</sup> GUÉRY 1979, 94–95.

<sup>52</sup> *Ibid.*, 132–133.

<sup>53</sup> HAYES 1972, 15.

<sup>54</sup> BEN LAZREG, MATTINGLY 1992, 62, 120, 154; TORTORELLA 1995, 86.

<sup>55</sup> BONIFAY 2004, 7.

<sup>56</sup> HITCHNER 1990, 256.

<sup>57</sup> NEURU 1987, 177.

<sup>58</sup> FENTRESS 2001, 265.

<sup>59</sup> NEURU 1987, 177; HITCHNER 1990, 256.

<sup>60</sup> NEURU 1987, 179.

<sup>61</sup> STERN 1968, 147.

<sup>62</sup> HAYES 1972, 300.

<sup>63</sup> NEURU 1987, 181.



Fig. 5 – Pottery production sites noted in the Kasserine region (K. Heslin, created using Google Earth ©).

distribution<sup>64</sup>, although HAYES notes that “a bowl found at Germa and some pieces from the region of *Gemellae* on the African *limes* may indicate that this ware had a fairly wide distribution within North Africa”<sup>65</sup>.

By the late third to early fourth centuries, imports no longer came to the centre from the north, and local production had almost entirely taken over – by the fourth-fifth centuries the region had become self-sufficient in fineware ceramics. Such regional wares could achieve a wide geographical distribution within Africa, if not abroad<sup>66</sup>. The pottery from these two sites demonstrates the integration of local ceramics into the market, completely substituting imports. A similar pattern occurs in central Algeria. Once production commenced, the internal Sitifis region experienced a regional and interregional export pattern, but exportation was not geared towards the wider Mediterranean markets – by the fourth and fifth century, the finewares consumed at Sétif had become those of an entirely local production, of which none of the styles correspond to known forms of ARS<sup>67</sup>.

### **ARS Exportation**

Following the decline of the ITS industry, ARS went on to “supply virtually the whole of the [Italian] demand for tablewares, including the enormous market of Rome itself”<sup>68</sup>, and was highly successful in the Western Mediterranean. This can be seen in the numerous survey collections compared in the article by Fentress *et alii* – “Accounting for ARS”<sup>69</sup> – as well as in detailed examination of the site assemblages of *Ostia*, Benghazi and Corinth. For example, quantification of finewares from *Ostia* excavated from the *Terme del Nuotatore* shows that during the last quarter of the first century AD, ITS represented 83% of all fine

<sup>64</sup> STERN 1968, 149.

<sup>65</sup> HAYES 1972, 300.

<sup>66</sup> BONIFAY 2004, 449.

<sup>67</sup> TORTORELLA 1995, 87; HAYES 1972, 303; FENTRESS 1990.

<sup>68</sup> HAYES 1972, 416.

<sup>69</sup> FENTRESS *ET AL.* 2004.

wares (with Gallic *sigillata* representing 16% of imports, and ARS 1%). ITS declines to 75% by the first half of the second century, and ARS increases to fill the gap. By the second half of the second century ARS has begun to dominate at 80% of all fineware sherds (ITS drops to 16%, GTS to 4%) and by the third century it has replaced virtually all finewares on site – 99% of sherds are ARS<sup>70</sup>. Although now over 30 years old, Hayes' distribution maps illustrate the spread of this fineware on a grand scale, with ARS dominating assemblages in both East and West<sup>71</sup>. So much so that by the third century AD the fine ceramics of Zeugitana and Byzacena were being imitated in the central and northern regions of Italy. By the fourth century AD, the imitations tended to be specifically of the ceramics of the north-Tunisian and central-Tunisian work shops (*Africana D terra sigillata* and *sigillata C* respectively)<sup>72</sup>, and appeared in Pannonia, Dalmatia, and Syria, amongst other regions<sup>73</sup>.

### **ARS Discussion**

To summarise, following – or perhaps concomitant with – the decline of ITS importation, the northern coastal areas of North Africa (primarily Tunisia) commenced manufacturing ARS. This production was traded regionally, until hinterland production centres begin to create local forms of ARS for local and regional markets, and there was a corresponding inwards drift in regional importation. Externally, from the 2<sup>nd</sup> century onwards, large-scale exportation of coastal ARS productions meant that the African fineware had become the premium tableware across the entire Mediterranean basin, even penetrating those Eastern regions with autonomous fineware production.

That imports could be replaced in such a successful manner as to encourage regional specialisation, mass-production and extra-regional exportation indicates the growth experienced by the North African region. The near self-sufficiency in pottery, perhaps combined with that of wine, and the known bulk exports of oil and grain, may have also led to the production of glass (for instance, at Cherchel<sup>74</sup> and Carthage) and iron artefacts (at *Leptiminus*, as referenced earlier), whose high-bulk yet low-value raw materials had to be imported into the region for secondary manufacture. Production sites have been identified at *Leptiminus* (for the metal working of iron ore that had arrived as ballast)<sup>75</sup> and at Cherchel (for the production of glass in particular), although there is no scope to address the issue of greater urban production within the limits of this paper<sup>76</sup>.

### **Conclusion**

With both fineware and wine production, the archaeological record has shown that imports gave way to autonomous production and exportation, on varying scales. It is particularly fascinating that the well-known evidence for finewares appears to follow a similar model to wine, which is less simple to trace in the archaeological record. This may point to the linked nature of types of growth within North Africa during the Roman Imperial period. It is possible that Roman expansion into the hinterland pushed import replacement – a similar cause-and-effect relationship was also demonstrated by MCCARTY<sup>77</sup> in his charting of the changes

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<sup>70</sup> Figures from RICE, this session.

<sup>71</sup> See HAYES 1972.

<sup>72</sup> TORTORELLA 1995-1996; cf. BONIFAY 2004.

<sup>73</sup> TORTORELLA 1995-1996, 96.

<sup>74</sup> LEVEAU 1984, 69–70.

<sup>75</sup> BEN LAZREG, MATTINGLY 1992; STIRLING *ET AL.* 2001, 80.

<sup>76</sup> See WILSON 2002, 237–41, 242–7 and 248–9 for an in-depth treatment of urban production at Timgad and Sabratha, and D'ESCURAC-DOISY 1966 for an examination of the glass found within Algeria. Also note WILSON 1999, for fish-salting vats and glass cullet found at Sabratha.

<sup>77</sup> MCCARTY, this session.

in cult practice, which showed a parallel hinterland development as the Roman legions progressed into the interior. A pattern is thus suggested – coastal importation and production occurs first, followed by the greater internal development of both the agricultural and manufacturing landscapes, followed by and/or concurrent with exportation. The minimal export of wine points to internal growth, the mass-export of finewares even more so, and even today the World Bank advocates export-driven models of development in order to create growth<sup>78</sup>. The increased productivity gained from import replacement would have allowed North Africa to improve its productive capacity and realise a comparative trade advantage that culminated with different types of North African products traded internally and Mediterranean-wide on a grand scale. Import replacement, as seen through the lens of archaeology, has highlighted the dynamic nature of growth in this region.

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### **Bibliography**

- AHMAD J., 1976. Import Substitution and the Growth of Exports. An Econometric Test. *Revue Economique*, 2, 286–96.
- BARKER G. W. W., JONES G. D. B., 1984. The UNESCO Libyan Valleys Survey VI: Investigations of a Romano-Libyan Farm, Part I. *LibStud*, 15, 1–44.
- BEN ABED-BEN KHADER A., BONIFAY M., GRIESHEIMER M., 1999. L'amphore Mauretienne de la Station 48 de la Place des Corporations, Identifiée à *Pupput* (Hammamet, Tunisie). *AntAfr*, 35, 169–180.
- BEN KHADER A. B. A., GRIESHEIMER M., 2004. *La nécropole romaine de Pupput*. Roma.
- BEN LAZREG N., BONIFAY M., DRINE A., TROUSSET, P., 1995. Production et commercialisation des *salsamenta* de l'Afrique ancienne. In P. TROUSSET (ed), *Productions et exportations africaines. Actualités archéologiques*. Paris, 103-135.
- BEN LAZREG N., MATTINGLY D. J., 1992. *Leptiminius (Lamta): A Roman Port City in Tunisia, Report no.1*. Ann Arbor.
- BONIFAY M., 2004. *Etudes sur la céramique romaine tardive d'Afrique*. Oxford.
- BRUN J.-P., 2004a. *Archéologie du vin et de l'huile dans l'Empire romain*. Paris.
- BRUN J.-P., 2004b. *Archéologie du vin et de l'huile de la préhistoire à l'époque hellénistique*. Paris.
- BRUTON H. J., 1998. A Reconsideration of Import Substitution. *Journal of Economic Literature*, 36, 903–936.
- CAGNAT R., 1914. *Cours d'épigraphie latine*. Paris.
- D'ESCURAC-DOISY H., 1966. Verrerie antique et collections du Musée national des Antiquités d'Algérie. *Bulletin d'Archéologie Algérienne*, 2, 129–158.
- DANGRÉAUX B., DESBAT A., PICON M., SCHMITT A., 1992. La Production d'amphores à Lyon. In F. LAUBENHEIMER (ed), *Les Amphores en Gaule: production et circulation: table ronde internationale* (Metz, 4-6 octobre 1990). Paris, 37–50.
- DAVIES J., 1999. *Death, Burial, and Rebirth in the Religions of Antiquity*. London.
- DESBAT A., 2003. Amphorae from Lyon and the Question of Gaulish Imitations of Amphorae. *Journal of Roman Pottery Studies*, 10, 45–49.
- FANE G., 1973. Consistent Measures of Import Substitution. *Oxford Economic Papers, New Series*, 25, 251–261.

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<sup>78</sup> BRUTON 1998.

- FENTRESS E., 1990. The Economy of an Inland City: Sétif. In École française de Rome (ed), *L'Afrique dans L'occident romain*. Roma, 117–128.
- FENTRESS E., 2001. Villas, Wine and Kilns: The Landscape of Hellenistic Jerba. *JRA*, 14, 249–267.
- FENTRESS E., FONTANA S., HITCHNER B., PERKINS P., 2004. Accounting for ARS: Fineware and Sites in Sicily and Africa. *Side-by-side survey: comparative regional studies in the Mediterranean World*. Oxford, 147–162.
- FREED J., 1996. Early Roman Amphoras in the Collection of the Museum of Carthage. *Echos du Monde Classique*, XL, 119–155.
- GUERY R., 1979. Les marques de potiers sur *terra sigillata* découvertes en Algérie. I. Sigillées provinciales (hispanique et gallo-romain). *AntAfr*, 13, 23–98.
- GUERY R., 1987. Les marque de potiers sur *Terra Sigillata* découvertes en Algérie. II. Sigillée tardo-italique. *AntAfr*, 23, 149–192.
- HAYES J. W., 1972. *Late Roman Pottery*. London.
- HESLIN K., forthcoming. Approaching the Roman Wine Trade from the Mediterranean Hinterland: A Study of Dolia Shipwrecks. In D. ROBINSON, A. WILSON (eds), *Maritime Archaeology and Ancient Trade in the Mediterranean*. Oxford.
- HESNARD A., 1997. Entrepôts et navires à dolia: L'invention du transport de vin en vrac. In D. MEEKS, D. GARCIA (eds), *Techniques et Economic Antiques et Médiévales: ile Temps de l'Innovation*. International Colloquium CNRS (Aix-en-Provence, 21-23 Mai 1996). Aix-en-Provence, 130–131.
- HITCHNER R. B., 1990. The Kasserine Archaeological Survey - 1987. *AntAfr*, 26, 231–260.
- HURST H. R. ET AL., 1984. *Excavations at Carthage: the British Mission*. Oxford.
- KEHOE D. P., 1988. *The Economics of Agriculture on Roman Imperial Estates in North Africa*. Gottingen.
- LEVEAU P., 1984. *Caesarea de Maurétanie: une ville romaine et ses campagnes*. Paris.
- MARLIERE E., 2002. *L'outre et le tonneau dans l'occident romain*. Montagnac.
- NEURU L. L., 1987. Red Slipped Wares of Southwestern Central Tunisia. *Rei Cretariae Romanae Fautorum Acta*, 25-6, 175–188.
- PEACOCK D. P. S., BEJAOUI F., BEN LAZREG N., 1990. Roman Pottery Production in Central Tunisia. *JRA*, 3, 59–84.
- POINSSOT L., 1936. A fait parvenir une note de M. G. L. Feuille sur des vestiges d'un établissement agricole des environs de Thanae. *Bulletin Archéologique du Comité des Travaux Historiques et Scientifiques*, 1936-7, 141–146.
- STERN E. M., 1968. Note analytique sure des tessons de sigillée claire D ramassés à Henchir es Srira et Sidi Aich. *BABesch*, 43, 146–154.
- STIRLING L. M., MATTINGLY D. J., BEN LAZREG N., 2001. *Leptiminus (Lamta): The East Baths, Cemeteries, Kilns, Venus mosaic, Site museum and Other Studies*. Portsmouth, R.I.
- TCHERNIA A., 1997. Le tonneau, de la bière au vin. *Techniques et Economic Antiques et Médiévales: ile Temps de l'Innovation*. International Colloquium CNRS (Aix-en-Provence, 21-23 Mai 1996). Aix-en-Provence, 121–129.
- TORTORELLA S., 1995. La Ceramica Africana. Un bilancio dell'ultimo decennio di ricerca. In P. TROUSSET (ed), *Productions et exportations africaines. Actualités archéologiques*. Paris, 79–102.
- VAN DER VEEN M., 1985. The UNESCO Libyan Valleys Survey X: Botanic Evidence for Ancient Farming in the Pre-Desert. *LibStud*, 16, 15–28.
- WILSON A., 1999. Commerce and Industry in Roman Sabratha. *LibStud*, 30, 29–52.
- WILSON A., 2002. Urban Production in the Roman World: the view from North Africa. *Papers of the British School at Rome*, LXX, 231–274.