Notae Praehistoricae 27-2007 : 69-74

Searching for the Stone Age in the harbour of Ghent
How to combine test trenching and Stone Age archaeology

Caroline RYSSAERT, Yves PERDAEN, Wouter DE MAEYER, Pieter LALOO,
Wim DE CLERCQ & Philippe CROMBÉ

Summary

This contribution deals with the difficulties in assessing Stone Age sites within the methodology of current project archaeology in the coversand area of Flanders. A combination of test trenching and auguring is proposed to deal with this problem. Two case studies, Desteldonk - *Moervaart-Zuid* and Evergem-*Kluizendok*, both positioned in the harbour of Ghent, are discussed in this paper.

Keywords: Stone Age archaeology, methodology, test trenches, auguring, Desteldonk, Evergem, Ghent (B)

1. Introduction

In the coversand area of Flanders a growing number of the archaeological projects are currently conducted in a standardized way. The first stage consists of (dis-)continuous test trenching. In the second stage it is decided wither larger excavation areas are to be opened up, based on the features found in these trenches (e.g. Cherreté & De Clercq, 2007). This methodology has proven its efficacy in detecting sites characterized by middle- to low density in soil-features, although comparative research has demonstrated the dangers for some periods such as the Early Middle Ages (Hey & Lacey, 2001). However, this method of archaeological investigations is not well adopted to the detection of Stone Age sites. The Palaeolithic and Mesolithic record in the cover sand area is largely known by its lithic scatters as little or no features are preserved. A small number of possible storage pits containing numerous carbonised hazelnut shells, dating from the (Early) Mesolithic, are known from Verrebroek - *Dok 1*, Verrebroek - *Aven Ackers* and Turnhout-*Ravelskamp* (Crombé *et al.,* 2005; Perdaen *et al.,* 2005; Van Roeyen, 1990). Another type of feature occurring occasionally on Mesolithic sites is the so called hearth-pit (Groenendijk, 1987). Hearth-pits are small circular to elliptical features with a homogeneous dark grey to black fill coloured by the large amounts of ash and charcoal fragments. Usually they occur in clusters of many tens or even hundreds of hearth-pits. A the sites of Verrebroek - *Dok 1* and Doel-*Deurganckdok* altogether more han a hundred hearth-pits have been excavated (Crombé *et al.,* 2005). But even for the Neolithic evidence of structural features is still very limited. For example at the Final Mesolithic/Early Neolithic sites of Doel-*Deurganckdok* only a limited number of accumulated burnt bone fragments associated with clay patches, indicative for structured hearths were discovered (Crombé *et al.,* 2004). And in these instances the features were protected by a thick peat and clay layer. At the Middle Neolithic site of Doel-*Deurganckdok*, only a diffuse scatter consisting of flint and sherds was recorded. No features were found, although the preservation conditions were similar to the other sections. For the Final Neolithic the information is slightly better. Alongside some funerary contexts belonging to the Bell beaker culture (e.g. at Sint-Denijs-Westrem - *Flanders Expo*, Kruishoutem, Temse, etc...), some rare isolated features have been recorded as for example an elongated pit containing a limited number of flint and pottery fragments at Evergem-*Kluizendok*. Unique was the discovery of a trapezoidal, two-aisled house assigned to the *Deûle-Escaut* group at Waardamme (Demeyere *et al.,* 2004). This limited number of features does not imply that prehistoric people only seldom constructed houses in the coversand area. Probably the majority of these prehistoric features have been destroyed or blurred due to agriculture and/or soil formation processes. With the exception of Doel-*Deuganckdok* all of the above mentioned examples were found in the C-horizon, on top of heavily truncated sand ridges with a partially preserved podzol soil. But also in better preserved contexts, such as at the peat and clay covered sites of Doel, soil processes may have blurred features; as a matter of fact numerous hearth-pits only became visible underneath a bioturbated B-horizon. When these soil formation processes took place remains a question. What we do know is that in many features, dating from the Bronze Age up till the Roman period, traces of podzolisation are visible. Therefore it may be concluded that almost all traces older than the Bronze Age are erased unless they were dug deep into the C-horizon. But even in the latter cases their visibility remains limited

and they may pass the archaeologists eye unnoticed. Luckily prehistoric people also left a lot of rubbish behind.

A more adjusted method for the detection of these flint scatters could be auguring surveys. This technique is based on a systematic boring of the surface within a fixed grid, taking samples of the underlying sand matrix (in this case the podzol) which are consequently sieved and examined for the presence of minor archaeological remains such as chips, charcoal, bone, hazelnut fragments, etc. (Crombé & Meganck, 1996). When using this method it is crucial to sieve the sediment on a fine mesh (maximum 3 mm, ideally 1 mm) and to use a small grid in order to detect the small flint scatters (e.g. Bats 2000-2001, Bats 2007, Crombé & Meganck, 1996, Groenewoudt, 1994). An alternative but more time-consuming and destructive method is the use of systematic test pits. Depending on preservation conditions of the sites and landscape features arguments can be put forward for both methods (Bats, 2001; Depraetere *et al.,* 2006).

Currently auguring or test pits are only exceptionally applied in project archaeology. A limited knowledge of the Stone Age record within the responsible administration, and so-called economical restrictions are the main reason for this. As a result Stone Age sites are seldom discovered.

2. *Methodology*

In the two case studies presented in this paper, we choose to conduct an auguring survey in addition of the test trenches. The methodology proposed here is not the ideal way to deal with Stone Age sites. It is merely an attempt of some archaeologists, concerned with Stone Age archaeology, who had to deal with the restrictions of test trenching. Keeping these remarks in mind, this attempt has to be seen as a compromise rather than a well funded method. Moreover, it is oriented on the detection of relatively recent Stone Age sites (Mesolithic and Neolithic), as the detection of deeper lying Palaeolithic sites is only integrated to a certain limit.

Traditionally an augering survey proceeds through three stages. It starts with a study of the soilmap, in order to seek potential areas where Stone Age sites could be preserved. For the purpose of a palaeotopographical and palaeoenvironmental reconstruction borings are affected within a 20 m interval grid. Secondly for the strictly archaeological purpose a smaller grid is used. Due to the particularly small surface of dwelling units the interval between the boring-points is set to 5 m using a staggered triangular grid (Bats, 2007; Crombé & Meganck, 1996; Groenewoudt, 1994: 170; Van Gils & De Bie, 2006). The last stage is off course an evaluation of the sites detected (preservation, chronology, spatial lay out). For this purpose additional augurings need to be executed.

In Desteldonk - *Moervaart-Zuid* and Evergem-*Kluizendok* palaeotopographical information could be retrieved from the stratigraphical sections within the test trenches. Instead of the information from the soil map and the 20 m auguring grid the test trenches were used to detect potential areas for well preserved Stone Age sites. So the auguring survey was oriented towards the detection of lithic scatters.

In addition an attempt was done to find palaeosoils on a lower level. To record earlier Stone Age sites at Desteldonk - *Moervaart-Zuid* and Evergem-*Kluizendok* some deep trenches were dug. Deep trenching can only be done in areas where no features have been detected which could be destroyed. It is also important to take into account what kind of developments will be done on the site (e.g. the construction of a road, buildings, water cistern, etc.). As archaeological surveys are quite often planned just in advance of the start of the building activities, this is necessary in order not to jeopardize the stability in a later stage.

3. *Results*

3.1. *Desteldonk* - Moervaart-Zuid

At Desteldonk - *Moervaart-Zuid* (East Flanders) the *Havenbedrijf Gent GAB* is extending their industry zone. Therefore an archaeological survey was put up to detect if sites were present and excavations were necessary. Two of the present authors (Wouter De Maeyer & Caroline Ryssaert) conducted this project (Ryssaert *et al.,* 2007). Philippe Crombé and Wim De Clercq were responsible for the scientific coordination.

The research area is situated on the southwest bank of the Moervaart depression, a late glacial mire which extended over a length of c. 13 km. Although the depression has been known for its numerous Final Palaeolithic and Mesolithic sites, the research area is situated just outside the main concentration of Stone Age sites (Van Vlaenderen *et al.,* 2006; Kerrinkx, 1989). The industrial site of Desteldonk (19 ha) is positioned between the large sand ridge of Desteldonk and the Moervaart River. Besides a few smaller sand ridges, the area is known as a wet area and is assumed to have been unsuitable for early occupation.

The survey started with test trenching. Trenches were implanted parallel with the parcel borders and in relation to the local topography every 13 m. Based on the soil map two sand ridges were known, and if possible the trenches were oriented crosswise over their short sides.

Stratigraphical information was recorded based on characteristics seen on the surface. It was also gained in a more systematic way as every 50 meters a stratigraphical section was cleaned, drawn and photographed.

Based on these data a topographical map could be constructed that was much more detailed in comparison with the soil map (fig. 1). Not only did we record the position of the larger sand ridges more accurate, we also detected some small outcrops within the wetter areas. In the trenches Late- and Post-Medieval features were discovered but there were no indications for the presence of Stone Age sites.

The second stage of the project consisted of an auguring survey. As time was limited – because the auguring was originally not included in the project – choices had to be made. Based on the gathered stratigraphical information six zones were selected with a stratigraphical sequence favouring a good preservation of Stone Age sites. In this case six areas with a partly preserved podzol soil – $B2_{ir}$ horizon and only sporadically traces of the E-horizon – were selected for auguring. Drillings were done in a grid of 20 by 15 meters using a 15 cm Edelman-auger and taking samples of the soil following the stratigraphical horizons. These samples were later on wet sieved through 1 mm meshes. When positive, additional auguring were conducted within a grid of 5 or even 2.5 meter.

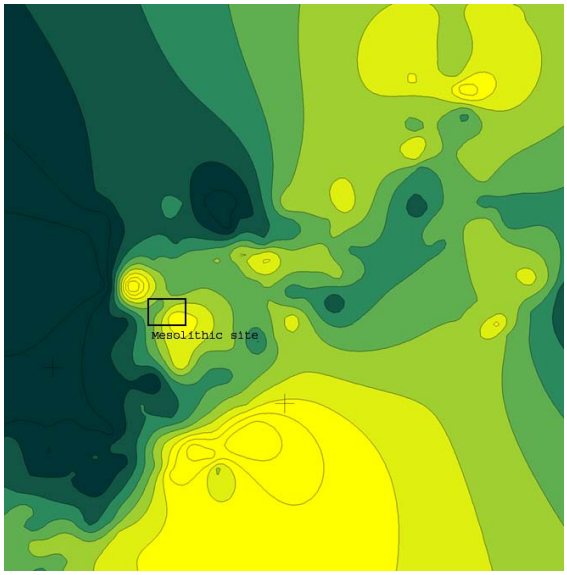

Fig. 1 – Reconstruction of the topography and position of the Mesolithic site (dark coulours are wet areas, lighter colours indicate higher areas).

In two zones positive auguring points were recorded. One zone was later on dismissed afterwards because of recent disturbances. The second area was selected for excavation. After mechanical removal of the plough layer the site was excavated using square meters of 50 by 50 cm. The sediment was wet sieved through 3 mm meshes.

Thanks to our detailed recording of the topography we noticed that the site was situated on the edge of a very small sand ridge. The spatial analysis showed a low density scatter without clear concentrations. It seemed that, although the podzol soil was present, the site was nevertheless affected to a great extent by bioturbation and ploughing activities.

The small lithic assemblage which could be recovered consists of 159 flint artefacts of which 46 % are smaller than 1 cm. Only 3 tools were found (fig. 2). Besides a retouched flake and blade, an obliquely truncated point was retrieved. This point, produced on a relatively broad bladelet, was proximally truncated and has an unretouched base. Comparable points appear from the end of the Final Palaeolithic and are characteristic for the Early Mesolithic (Crombé, 1999). On a technological level the assemblage seems to be quite homogeneous. The artefacts have been produced by direct percussion in a perpendicular way. Percussion platforms are unprepared and small. Bladelets are rather irregular.

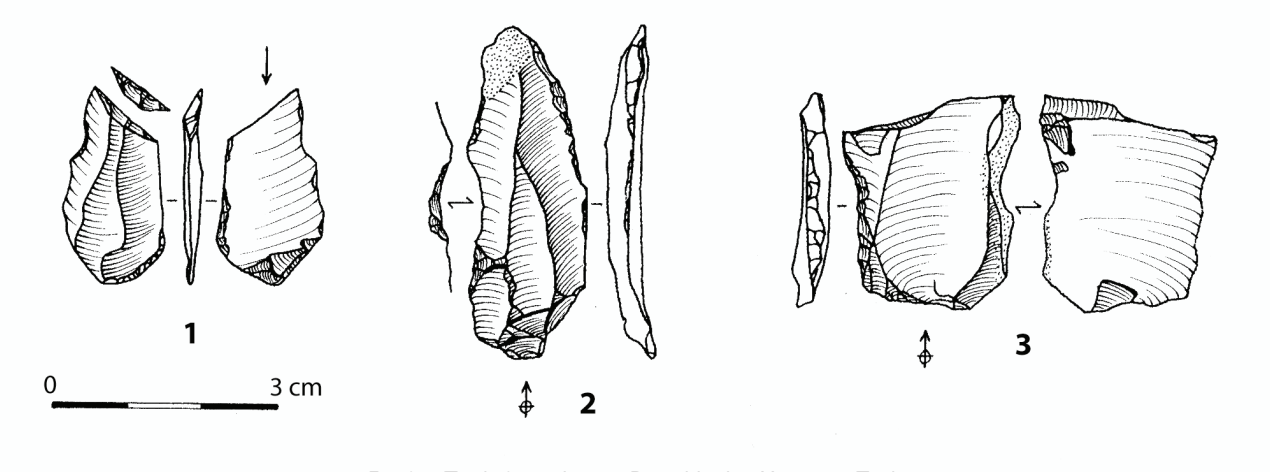

Fig. 2 – Tools from the site Desteldonk - *Moervaart-Zuid*:
1. obliquely truncated point, 2. retouched bladelet, 3. retouched flake.

Most of the artefacts have been made out of reworked quaternary gravel and six pieces seem to have been made out of Wommersom quartzite. Based on these elements – typology, technology, and raw material – the assemblage dates most likely back to the Early Mesolithic.

But the merit of this lithic scatter does not lie in its preservation or chronological position. Its geographical position is more significant as no Stone Age sites were known in the area so far. Its topographical position is important as it is situated on a very small outcrop within an overall wet area that was considered unsuitable for early occupation. And on a methodological it is very meaningful that test trenching did not succeed in finding this small site. Moreover one of the trial trenches cut right through this scatter without finding any flint artefacts.

A last attempt to find Stone Age sites was done through deep trenching. Using more detailed information from the *Ondergrond Vlaanderen* database (http://dov.vlaanderen.be) we noticed that the C-horizon consisted of river deposits from the Weichselian. It could not be excluded that Middle Palaeolithic palaeosoils were present or Late Palaeolithic artefacts – through vertical migration – were still present in the C-horizon. The deep trenches were mechanically dug in an area that was designated for the construction of a water cistern. The trenches were dug until the walls came down due to the groundwater level. This was at a depth of circa 4 m. Stratigraphically a typical sequence of sandy and clayey layers could be observed, of which one contained organic material, but no anthropogenic traces were detected.

3.2. *Evergem*-Kluizendok

Over the past two years a team from Ghent University (Pieter Laloo and Yves Perdaen; under the scientific coordination of Philippe Crombé and Wim De Clercq) has surveyed an area of circa 170 hectares in the rural district of Evergem (hamlet *Kluizen*, East Flanders). The reason for this archaeological survey was the construction of a new harbour dock, the so-called Kluizendok, and surrounding industrial estate. Alhough little was known about the archaeological potential of the research area a systematic survey of the area was considered expedient and an archaeological project was initiated The archaeological evaluation method was similar to the Destelonk - *Moervaart-Zuid* project and consisted of test trenching the entire research area. During this survey an extensive Roman settlement was discovered and excavated (De Clercq *et al.*, 2007). In addition some settlement traces from the Iron Age and some isolated features dating back to the Final Neolithic and Bronze Age were uncovered. Indications for the presence of people within the research area during the Stone Age are limited. Some flint artefacts dating back to the Final Palaeolithic, Mesolithic and possible also the Neolithic were found as stray finds or were retrieved as isolated artefacts from the younger Roman features. Only in two instances clear indications for the presence of a settlement in the vicinity of the research area were found. From a humiferous depression a dozen or so flint artefacts with a Middle Neolithic affinity were retrieved. The second consisted of the already mentioned Final Neolithic pit containing both flint and sherds.

Similar to the situation in Desteldonk - *Moervaart-Zuid* the stratigraphical information retrieved form the test trenches showed a number of areas, not indicated on the soil map, where the podzolic soil was well preserved. The majority of these needed to be interpreted as shallow depressions within an overall low lying, wet to marshy area around one prominent sand ridge on which the present hamlet Zandeken is situated. Some of these depressions were sampled for the retrieval of palaeo-ecological information.

However, in one instance a perfectly preserved podzol soil was discovered immediately adjacent to this large sand ridge. It was decided to look for possible prehistoric site in this depression using auguring.

First the surface was mechanically cleared of the weeds and shrubs. From this cleared surface one or two pieces of undiagnostic flints were recovered. Due to the small size of the area it was chosen to immediately sample it with the aid of a 15 cm Edelman-augur using a staggering grid of 5 by 5 m. The samples were wet sieved, in this case through meshes of 3 mm. Only one piece of flint was found. However, the same sample also contained four small fragments of pottery. Each of the four pieces is handmade, but a precise dating of the fragments is impossible. Most likely they are Roman, but Iron Age or early medieval is also possible. Around this positive auguring point four extra holes were drilled but no aditional artefacts were found and further research at this area was considered unnecesary.

4. Conclusion

Based on our experience during field work at Desteldonk - *Moervaart-Zuid* and Evergem-*Kluizendok* we come to the following conclusions:

1. The mechanical digging of test-trenches is unsuitable for the detection of Stone Age sites characterized by a low or zero-density in soil-features: small flint scatters can be left unrecorded when positioned in the zones between the trenches (which are implanted every 10 to 15 m). Even when a test trench cuts through a flint scatter there is a great chance that this scatter is left unrecorded because off a too low density as was the case at Desteldonk - *Moervaart-Zuid*. The same situation can be encountered when only the margins of a lithic scatter are found.

2. As a compromise topographical information retrieved from the sections in the test trenches can be used to select areas where flint scatters are potentially well preserved. An additional auguring survey is able to detect these sites.
3. Palaeo-soils and early Stone Age sites can also be detected using deep trenches and deep drillings. The latter however demands the use of mechanical drillings in order to be able to reach (and more important sample) levels which are situated many meters below actual surface.
4. This also implies a considerable increase in time and means necesseary in assessing the archaeological potential of a given area. Equally our case demonstrates the need to imply new sampling procedures, suitable for detection of zero- or low-density soil-featured sites, in the prescriptions made by government services responsible for Heritage Management.

Acknowledgments

We wish to thank our colleagues at the university of Ghent who were so kind to help during field work and later discussions (M. Bats, G. Noens & J. Sergant). Special thanks goes to Mark Meganck who helped with the digitalization and whose passing away remains a great loss to us.

References

BATS M., 2000-2001. *Prospectie- en waarderingsonderzoek van twee steentijdsites in Zandig Vlaanderen*. Unpublished Ma-thesis, Ghent University.

BATS M., 2007. The Flemish wetlands: an archaeological survey of the valley of the River Scheldt. In: BARBER J. *et al.*, *Archaeology from the Wetlands: Recent Perspectives. Proceedings of the 11th WARP Conference, Edingburh 2005. WARP Occasional Paper*, 18: 93-100.

BATS M. & DE REU J., 2006. Evaluerend onderzoek van boringen in de Kalkense Meersen (Oost-Vlaanderen, België). *Notae Praehistoricae*, 26/2006: 171-176

CROMBÉ P., 1999. Vers une nouvelle chronologie absolue pour le Mésolithique en Belgique. In: THÉVENIN A. & BINTZ P. (eds), *L'Europe des derniers chasseurs. L'Épipaléolithique et Mésolithique, Actes du 5e Colloque international UISPP, Commission XII (Grenoble, 18-23 septembre 1995),* Paris: 189-199.

CROMBÉ P. & MEGANCK M., 1996. Results of an auger survey research at the Early Mesolithic site of Verrebroek «Dok». *Notae Praehistoricae*, 16: 101-115.

CROMBÉ P., BATS M., WUYTS F. & VAN ROEYEN J.-P., 2004. Een derde vindplaats van de Swifterbantcultuur in het *Deurganckdok* te Doel. *Notae Praehistoricae*, 24: 105-107.

CROMBÉ P., VAN ROEYEN J.-P., SERGANT J., PERDAEN Y., CORDEMANS K. & VAN STRYDONCK M., 2000. Doel "Deurganckdonk" (Flanders, Belgium): settlement traces from the Final Palaeolithic and the Early to Middle Neolithic, *Notae Praehistoricae,* 20: 111-119.

CROMBÉ P., PERDAEN Y. & SERGANT J., 2005. Features: Archaeological description. In: CROMBÉ P. (ed.), *The Last Hunter-Gatherer-Fishermen in Sandy Flanders (NW Belgium). The Verrebroek and Doel Excavation Project. Volume 1: Palaeo-environment, chronology and features,* Ghent (= Archaeological Reports Ghent University, 3): 141-179.

DE CLERCQ W. & CHERRETÉ B., 2006. Les débuts de l'archéologie préventive en Flandre Orientale. In: BRUN P., MARCIGNY C. & VANMOERKERKE J. (eds). *Une archéologie des réseaux locaux. Quelles surfaces étudier pour quelle représentativité ? Actes de la table ronde des 14 et 15 juin 2005 à Chalons-en-Champgane* (= *Les Nouvelles de l'Archéologie*, 104-105): 40-45.

DE CLERCQ W., LALOO P., PERDAEN Y. & CROMBÉ P., 2007. Grootschalig nederzettingsonderzoek in een inheems-Romeins landschap : Het preventief archeologisch onderzoek « Kluizendok » in de Gentse haven (fase 2005-2006). *Romeinendag – Journée d'Archéologie romaine 2007*: 59-66.

DEPRAETERE D., DE BIE M. & VAN GILS M., 2006. *Archeologisch detailonderzoek naar steentijdsites in ruilverkaveling Merksplas. Uigevoerd in opdracht van de Vlaamse Landmaatschappij.* Intern Rapport Vlaams Instituut voor het Onroerend Erfgoed.

DEMEYERE F., BOURGEOIS J. & CROMBÉ P., 2004. Plan d'une maison du groupe de Deûle-Escaut à Waardamme (Oostkamp, Flandre Occidentale). *Notae Praehistoricae,* 24: 167-173.

GROENENDIJK H. A., 1987. Mesolithic hearth-pits in the Veenkoloniën (Prov. Groningen, The Netherlands), defining a specific use of fire in the Mesolithic. *Palaeohistoria,* 29: 85-102.

GROENEWOUDT B., 1994. *Prospectie, waardering en selectie van archeologische vindplaatsen: een beleidsgerichte verkenning van middelen en mogelijkheden*. Nederlandse Archeologische Rapporten, 17, Amersfoort.

HEY G. & LACEY M., 2001. *Evaluation of Archaeological Decision-making Processes and Sampling Strategies*. Kent County Council.

KERRINKX H., 1989. *Zaffelaere*. Archeologische Inventaris Vlaanderen, band XII.

PERDAEN Y., VERBRUGGE A. & DE BIE M., 2005. Steentijdvondsten in het tracé van de gastransportleiding DN 600 Weelde-Zandhoven 2 lot 1. *Notae Praehistoricae*, 25: 163-174.

RYSSAERT C., DE MAEYER W., CROMBÉ P., DE CLERCQ W., PERDAEN Y. & BATS M., 2007. *Archeologisch (voor)onderzoek te Desteldonk 'Moervaart-Zuid'*. UGent Archeologische Rapporten, 2007-3.

VAN DER HAEGEN G., CROMBÉ P. & SEMEY J., 1999. *Steentijdvondsten in het Meetjesland (Oost-Vlaanderen, België). Inventaris en geografische analyse*. Archeologische Inventaris Vlaanderen, Buitengewone reeks, 6, Gent.

VAN ROEYEN J.-P., 1990. *Mesolithische bewoning in de Wase Scheldepolders. Opgravingen en prospecties (1981-1983)*. Unpublished Ma-thesis, Ghent University.

VAN VLAENDEREN L., SERGANT J., DE BOCK H. & DE MEIRELEIR M., 2007. *Steentijdvondsten in de Moervaartdepressie (Oost-Vlaanderen, België). Inventaris en geografische analyse*. Archeologische Inventaris Vlaanderen, Buitengewone reeks, 9.

Caroline Ryssaert
Yves Perdaen
Pieter Laloo
Philippe Crombé
Wim De Clercq
Vakgroep Archeologie en
Oude Geschiedenis van Europa
Universiteit Gent, Blandijnberg 2
BE – 9000 Gent
carolineryss@hotmail.com
Yves.Perdaen@UGent.be
Pieter.Laloo@UGent.be
Philippe.Crombe@UGent.be
Wim.DeClercq@UGent.be

Wouter De Maeyer
Examino cvba
23, Guido Gezellestraat
BE - 8560 Welvelgem
Wouter.DeMaeyer@skynet.be