

Computer-Aided Palaeography, Present and Future

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1. The Problem with Palaeography

{Palaeographers} are all too often regarded as
repositories of authoritative dogma.'

D. Ganz, 'Editorial Palaeography', *Gazette du livre médiéval* 16
(1990), p. 11

‘... an authoritarian discipline, the pertinence of which depends on the authority of the author and the faith of the reader.’

A. Derolez, *The Palaeography of Gothic Manuscript Books* (2003), p. 9

‘There can be no doubt that a crisis now exists in the discipline.’

Idem, p. 2

‘... the low esteem in which palaeography is now currently held...’

Ibid.

‘How is it possible to proceed in such a way that the description of a specimen of handwriting is as clear and convincing to its reader as it is to its author? An obvious answer is: by replacing qualitative data by quantitative ones. ... Indeed, there is very much to be said in favour of a quantitative approach to a matter so difficult to treat adequately with other techniques.’

Derolez, *The Palaeography* (2003), pp. 7–8

2. Digital FDA: A Possible Model?

Question:

Were these two samples written
by the same person?

‘In forensic handwriting research, experts have developed a personal and individual knowledge on handwriting. This expertise is difficult to verbalize, and to explain to others.’

Schomaker, ‘Advances in Writer Identification’,
Proc. 9th ICDAR (2007), §6

‘[The US Supreme] court found that the field had not, in fact, actually been subjected to rigorous testing.’

‘[Publications are] significantly different from scholarly articles in such fields as medicine or physics, in their **lack of critical scholarship.**’

US v. Prime (2002)

Question:

Were these two samples written
by the same person?

Question:


*Is it possible to objectively determine
whether these two pieces of
writing were written by the same
person?*


- Fully automatic systems can correctly identify writers 95% of the time or more
- The success-rate in almost all of these tests was about the same for human specialists and purely automatic systems

(Srihari 2002; Srihari 2008)

3. Computational Palaeography?

(punctus)

S1044-1  [Hand Details](#) [MS Details](#)


S1071-1  [Hand Details](#) [MS Details](#)

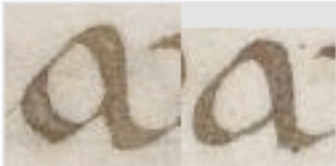
7

S1044-1  [Hand Details](#) [MS Details](#)

S1071-1  [Hand Details](#) [MS Details](#)


a

G108-1  [Hand Details](#) [MS Details](#)

G109-1  [Hand Details](#) [MS Details](#)

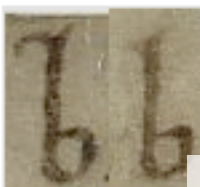
S1044-1  [Hand Details](#) [MS Details](#)

S1071-1  [Hand Details](#) [MS Details](#)

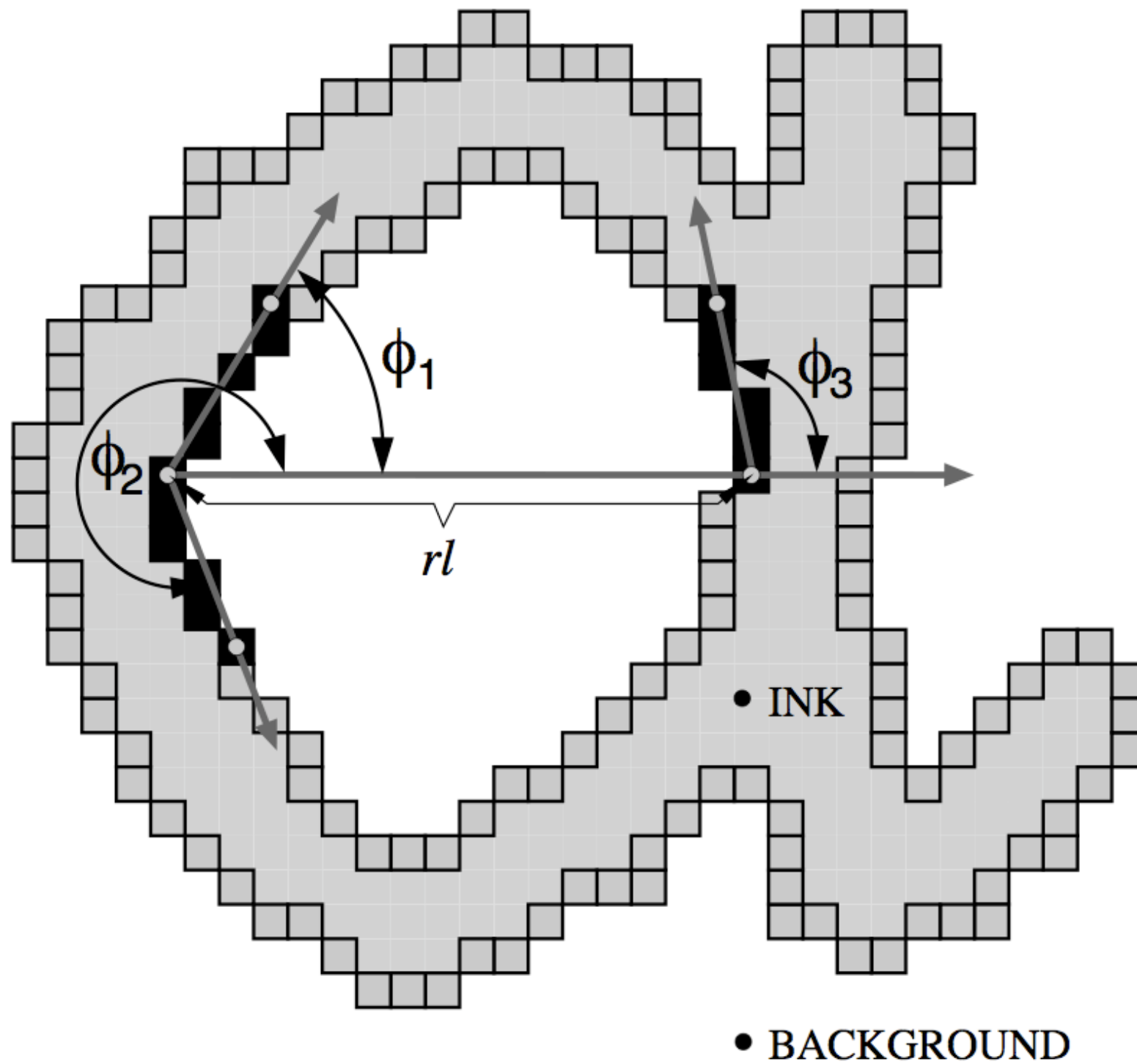
S950-1  [Hand Details](#) [MS Details](#)

b

S1044-1  [Hand Details](#) [MS Details](#)

S1071-1  [Hand Details](#) [MS Details](#)

c



Bulacu and Schomaker (2006)

‘Computational Palaeography’?

‘These methods are unlikely to replace, though they may supplement, the work of the document analyst,’
because, however powerful computers will (surely) become, **it will probably not be possible to cross-examine them.**’

T. Davis, ‘The Practice of Handwriting Identification’,
The Library (2007), p. 266 n. 27

4. Some Suggestions for a Computational Method

Requirements

1. 'Cross-examinable', including interpretable
2. Reproducible
3. Communicable
4. Allow variation and flexibility

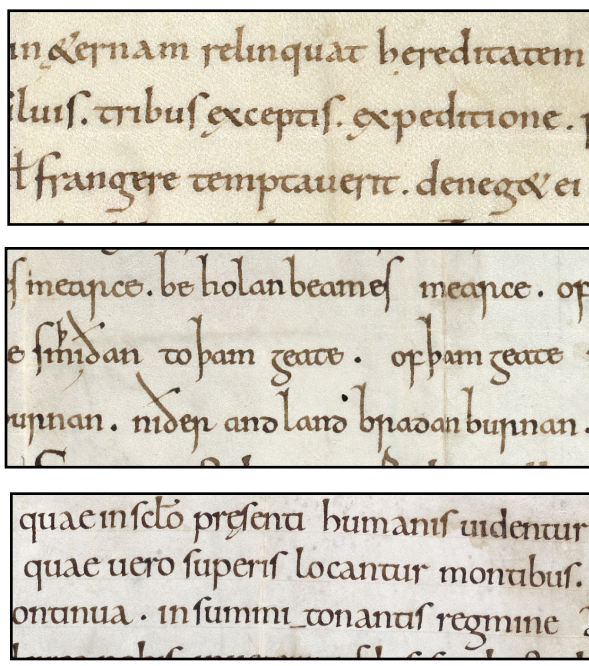
5. The 'Hand Analyser'

Some Design Principles

1. 'Cross-examinable', including interpretable
2. Reproducible
3. Communicable
4. Allow variation and flexibility

Some Design Principles

1. 'Cross-examinable', including interpretable
2. Both the data *and* the process is recorded
3. Data and processes can *both* be shared
(Java objects and plugins)
4. The system will never be 'finished',
therefore extensible, based on plugins



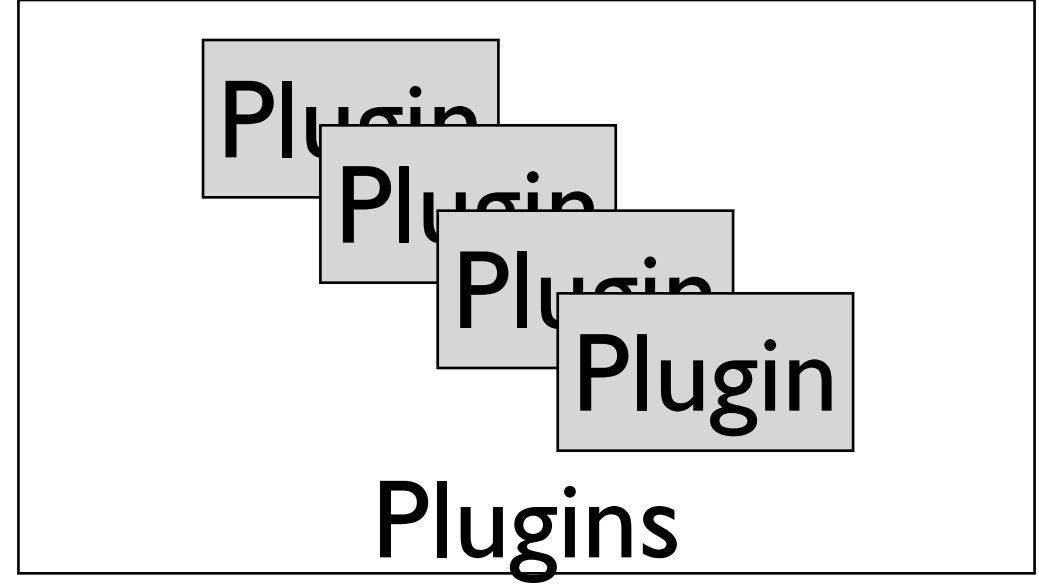
Comparison
of Hands

Handwriting
Analyser

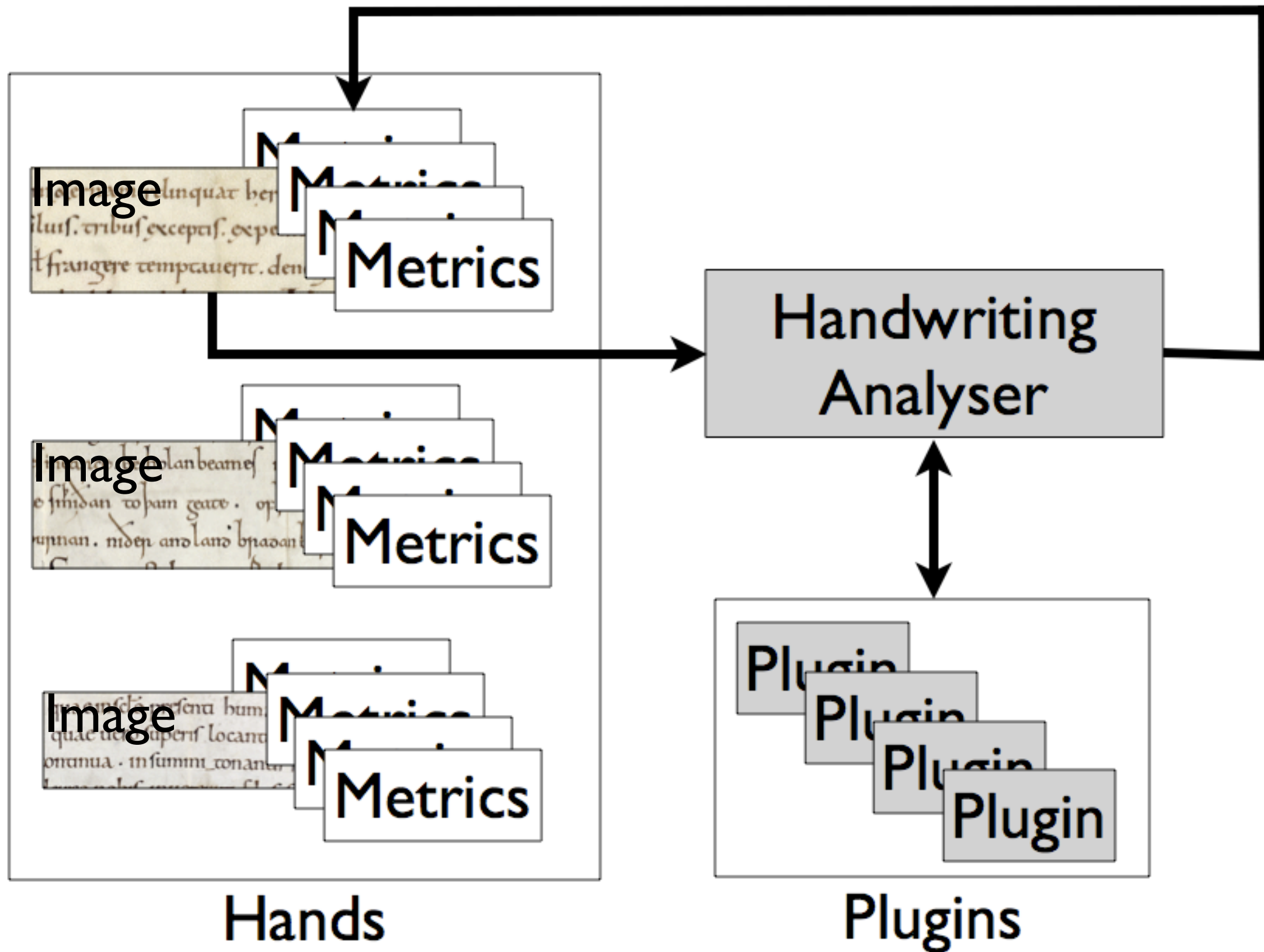
Metric

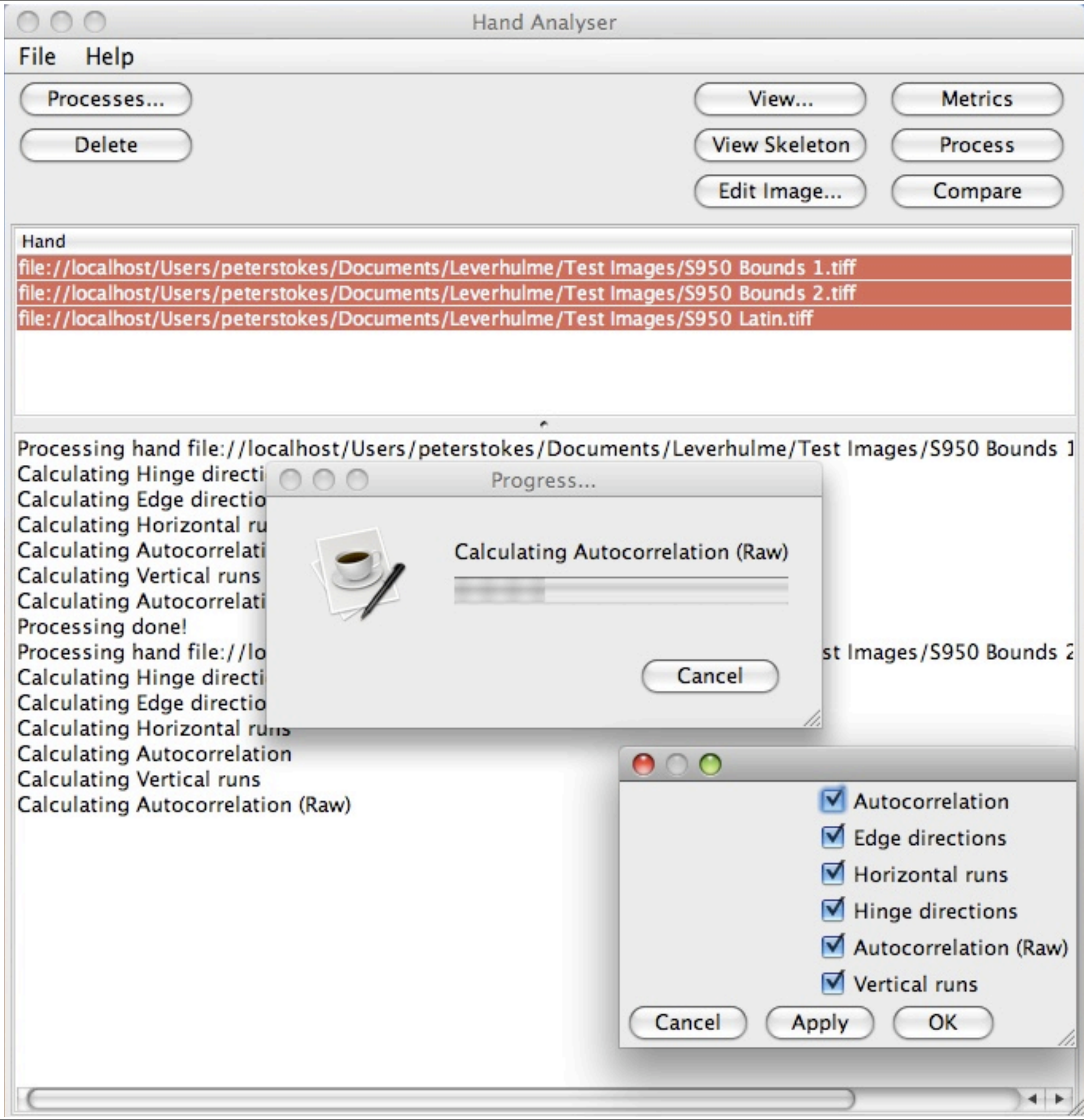
Metric

Metric



Each plugin is called in turn to generate a set of metrics
for each sample





File Help

Processes...

Delete

View...

Metrics

View Skeleton

Process


Edit Image...

Compare

Hand
file://localhost/Users/peterstokes/Documents/Leverhulme/Test Images/S950 Bounds 1.tiff
file://localhost/Users/peterstokes/Documents/Leverhulme/Test Images/S950 Bounds 2.tiff
file://localhost/Users/peterstokes/Documents/Leverhulme/Test Images/S950 Latin.tiff

Processing hand file://localhost/Users/peterstokes/Documents/Leverhulme/Test Images/S950 Bounds 1
Calculating Hinge direction
Calculating Edge direction
Calculating Horizontal runs
Calculating Autocorrelation
Calculating Vertical runs
Calculating Autocorrelation
Processing done!
Processing hand file://lo
Calculating Hinge direction
Calculating Edge direction
Calculating Horizontal runs
Calculating Autocorrelation
Calculating Vertical runs
Calculating Autocorrelation (Raw)

Progress...



Calculating Autocorrelation (Raw)

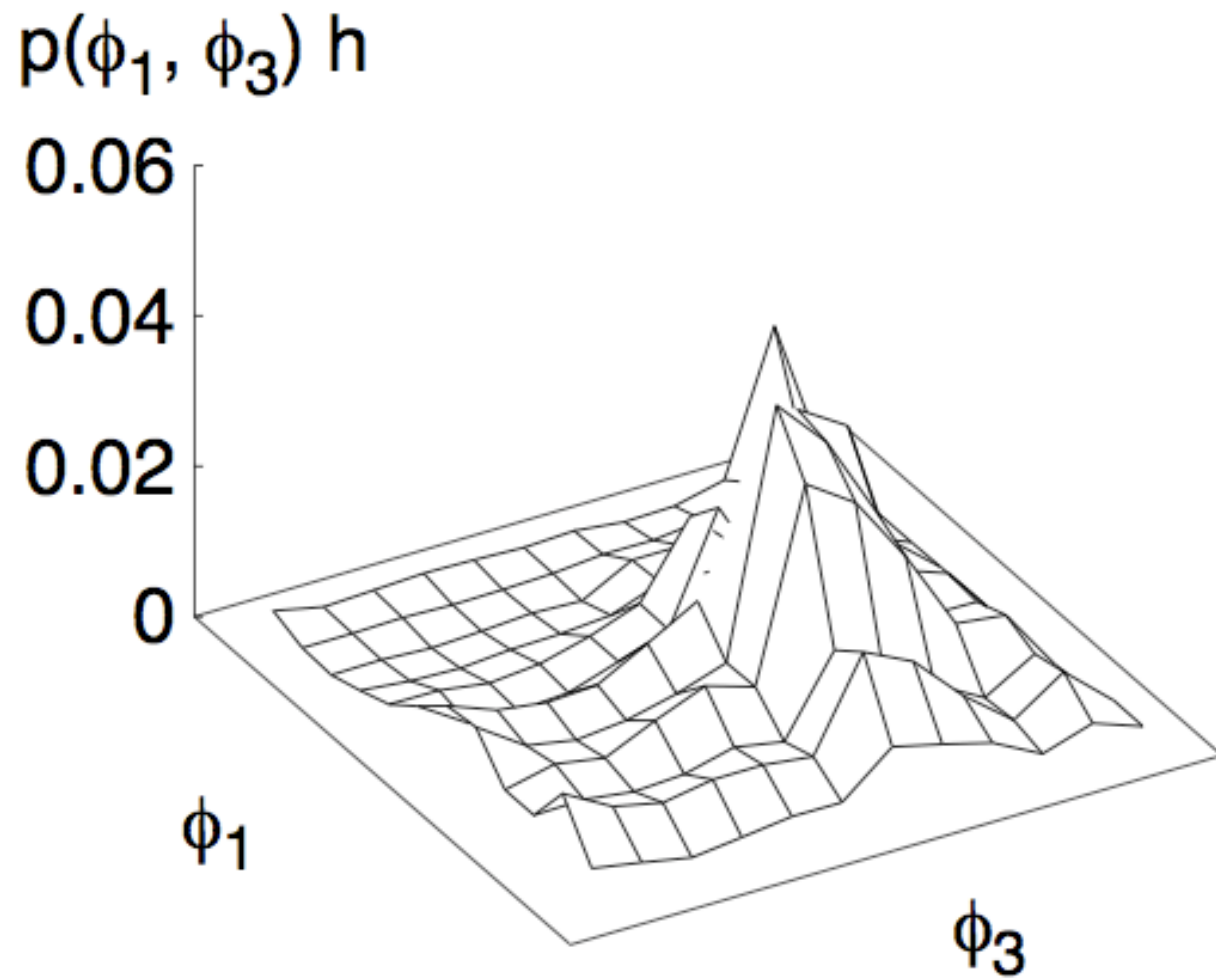
Cancel

Progress...

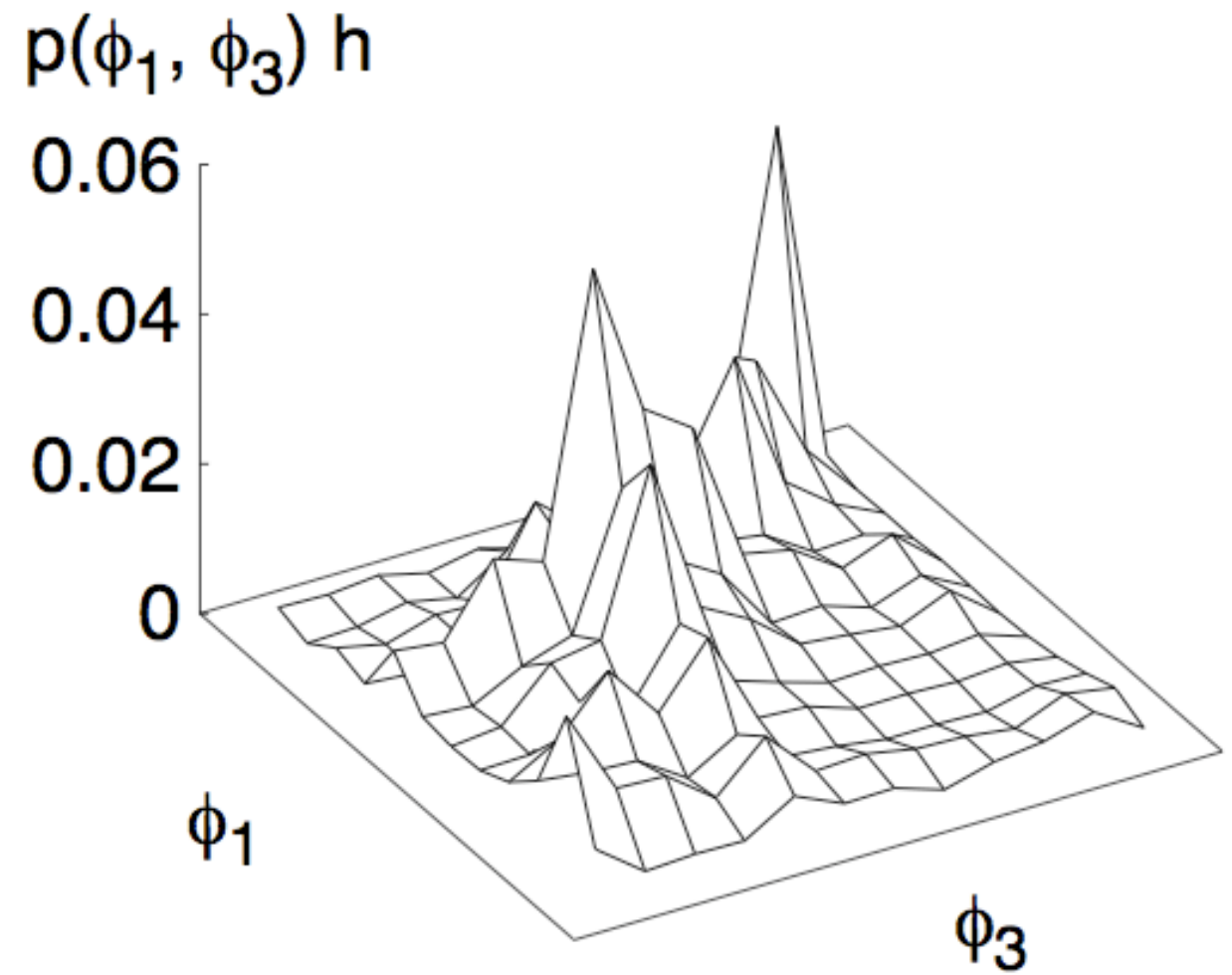
- Autocorrelation
- Edge directions
- Horizontal runs
- Hinge directions
- Autocorrelation (Raw)
- Vertical runs

Cancel Apply OK

writer 1 - sample 1



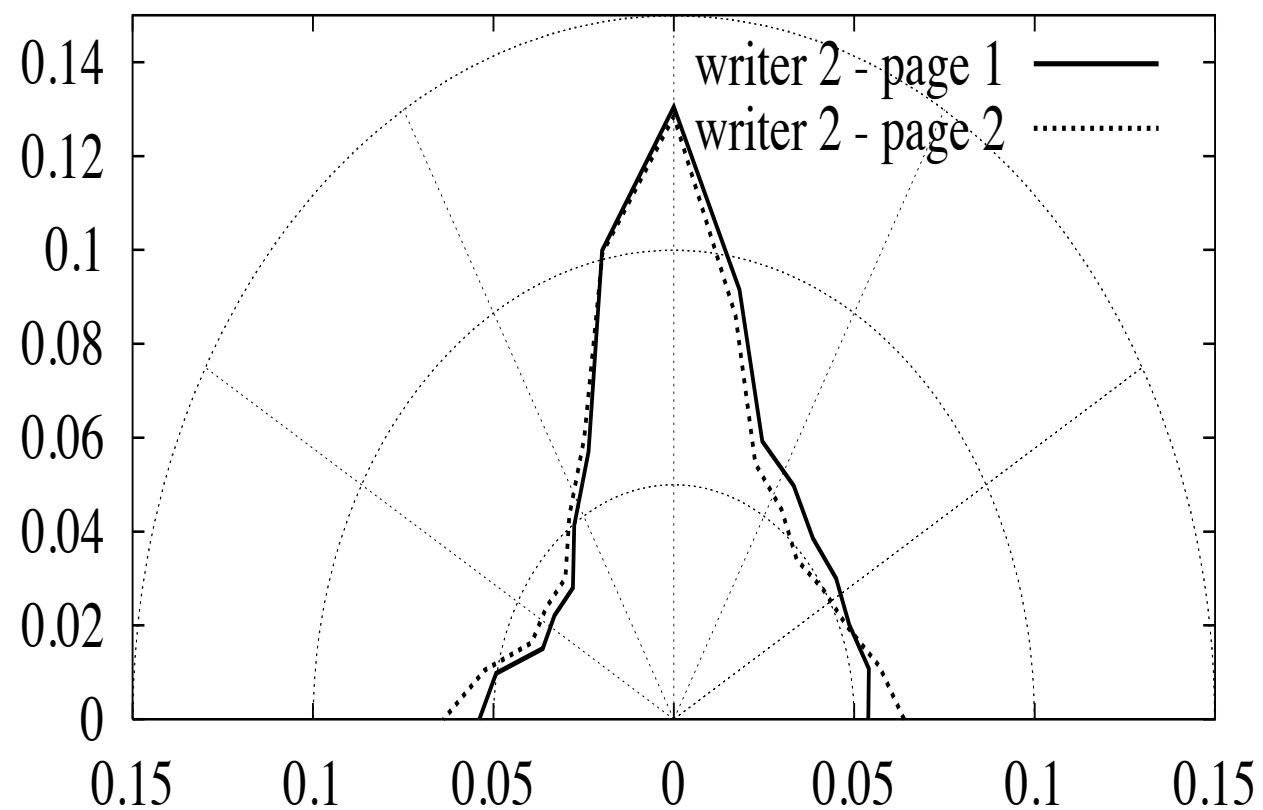
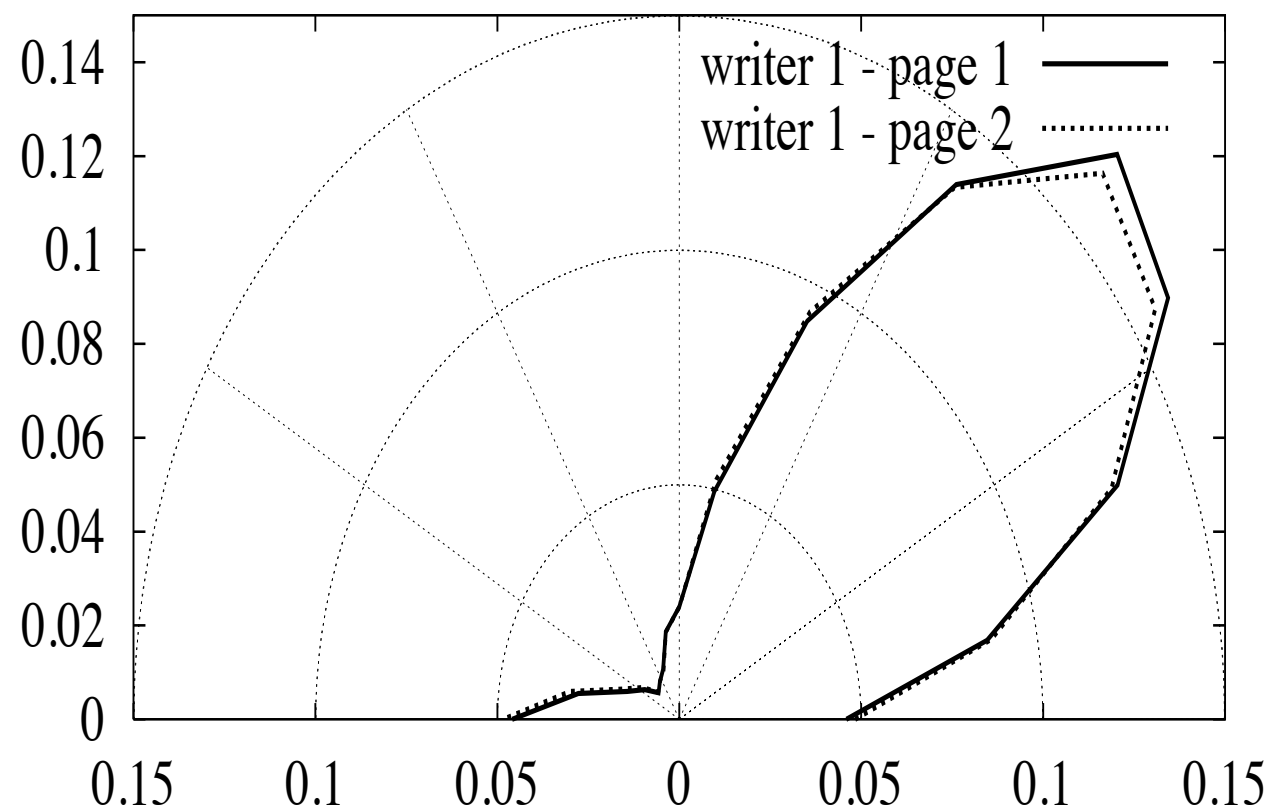
writer 2 - sample 1



Bulacu and Schomaker, 'Combining' (2006)

Omdat de oeffeningen
tot 300 kilometer
en verrekker om

Zij bezochten ve
korte afstanden
VW of een Fo



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