

The role and task of the forensic linguist in giving evidence

**The role and task  
of the forensic linguist  
in giving evidence**

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**Outline**

- 1. Introduction
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- 4. The forensic linguist's role
- 5. Difficulties
- 6. The forensic linguist's task
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  - 6.3 Plagiarism detection
- 7. In my opinion...
- 8. Perspectives

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**1. Introduction**

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**Areas of study and research**

- Language of the Law
- Language of the Legal Process
- Language as Evidence

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**2. Theoretical background**

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**Language as Evidence  
Idiolect**

- Reflects a series of linguistic traits that can in turn reveal an individual's gender, age, profession, educational level, religion, political affiliation, and others.
- Displays a series of clues for the determination of origin, ethnicity, race, (Smith and Shuy 2002), his or her non-nativeness, or even his or her bilingual ability.
- This linguistic evidence can:
  - be used in speaker identification, authorship attribution and plagiarism detection contexts.
  - help a court to understand what a text says and who its author is (Coulthard 2004, 2005a, 2005b).

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## Premises

- a) there exists more *inter-speaker/writer* than *intra-speaker/writer* variation.
- b) an individual's idiolect:
  - keeps relatively constant **across different textual genders**.
  - doesn't change very much **throughout time**.

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## 3. Aims, data and methods

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## Aims

- **To establish:**
  - among several candidates, who the author of a spoken/written disputed text is.
  - if the authorship of a spoken/written text can be attributed to a particular speaker/writer.
  - a linguistic profile of the possible author of a particular spoken/written text.

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## Data

- **Object of study:**
  - Language and specific languages.
- **Expert witness reports:**
  - involve and contain linguistic data.
  - not to be confused with statistical or legal data.
- Forensic linguists should restrict **their task:**
  - to description and observation,
  - without judging or condemning anyone.

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## Methods and techniques

- Quantitative and statistical methods in order to:
  - establish the **statistical significance of results**.
  - ensure research **validity** and **reliability**.
- Quantification might not always be possible:
  - **complementary** nature of forensic linguistic evidence.

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## The complementary nature of forensic linguistics

- a) **intra-evidentially** complementary.
- b) **inter-evidentially** complementary.

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## 4. The forensic linguist's role

### *The forensic linguist's role (1)*

- To **observe** those **linguistic variables and data** which might be decisive for:
  - determining, among several candidates, who the author of a particular spoken or written text is.
  - attributing one or several disputed texts to a particular speaker/writer.
  - detecting whether one or several texts have been produced by the same author or have been copied and plagiarized from one another.

### *The forensic linguist's role (2)*

- To **analyze** these data and variables **independently**.
- Two consequences are derived from this requirement:
  - 1. Desirable for an expert witness to be designated by the court.
  - 2. Also desirable, in both incriminating and defence situations, for expert witnesses to be independent.

### *The forensic linguist's role (3)*

- To **base** their analyses on **valid and reliable methods and techniques** by:
  - undertaking experimental research on real texts, outside case work.
  - applying the same techniques to real case texts.
  - using statistical analyses to establish the significance of results.
  - making use of corpus linguistics, and many other approaches.

### *The forensic linguist's role (4)*

- To select the **most relevant evidence**,
  - which is derived from these methods and techniques,
  - in order to use it in our expert witness reports.

### *The forensic linguist's role (5)*

- To **make this information much more comprehensible** to the judge and court.
  - 80% of the information included in the expert witness's report will be incorporated to the judgment by the judge.
  - Expert witnesses assist and support the court.

### The forensic linguist's role (6)

- To use **probability scales of qualified opinion** by means of evaluating:
  - the **analyses** performed.
  - the **techniques** which have been applied.

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## 5. Difficulties

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### Launching difficulties (1)

- The **nature of our judicial system**, as Pérez (2005) has pointed up, which is
  - based on the **Civil Law** system, also known as continental law,
  - framed around the **judge**, almost exclusively.

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### Launching difficulties (2)

- The requirement, stated in the new Acts,
  - **Ley de Enjuiciamiento Civil**
  - **Ley de Enjuiciamiento Criminal**
- of a second expert witness report to be asked by the judge, if there already exists one,
- is not always fulfilled.

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### Launching difficulties (3)

- The **judicial actors' ignorance**
  - Judges and magistrates
  - Prosecutors, attorneys and lawyers
  - Citizens
- of the **real activity that a forensic linguist** can perform.
- La Lingüística Forense, esa gran desconocida.

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### Developmental difficulties (1)

- FL development in certain areas of Language as Evidence:
  - **Incipient**
  - **slow**

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### Developmental difficulties (2)

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- The relative position that Authorship Attribution (AA) occupies with respect to Forensic Phonetics & Acoustics (FP&A), since
  - FP&A count on information about population distribution, *vis-à-vis* certain idiosyncratic parameters of the human voice
  - AA PD don't count on this *base-rate knowledge* information (Grant 2007).

### Developmental difficulties (3)

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- The nature of the data used in AA:
  - the concept of the idiolect.
  - the mistakenly used metaphor of the “fingerprint” applied to AA.
- So, while the value of the physical “fingerprint” is found in the fact that each simple
  - is identical and exhaustive in itself.
  - contains all the information needed in a suspect’s identification,
- any written linguistic sample, even the most extensive one, facilitates and offers very partial information as to its author’s idiolect.

## 6. The forensic linguist’s task

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### 6.1 David Bieber



### Acknowledgements

**Authorship attribution to a single author**

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- Peter French
- Philip Harrison
  - [www.jpfrrench.com](http://www.jpfrrench.com)
- JP French Associates
  - Registered in England and Wales
  - Registered office: 86 The Mount, York, YO24 1AR
- University of York.
  - Department of Language and Linguistic Science

### Background (1)

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- December 2003, Leeds, England
- Traffic police identify stolen vehicle
- Driver arrested, placed in back of police car.
  - Gave false name, Nathan Coleman.
- Conversation & other events captured on soundtrack of video recorder (in front of car).



## Background (2)

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- Subsequent to this exchange:
  - ‘Coleman’ drew a gun, shot and killed police officer Ian Broadhurst.
  - Attempted to kill 2 other police officers.
  - Escaped.



## Background (3)

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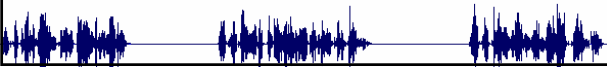
- Eventually recaptured in a hotel in Newcastle.
- Disguised, with hidden gun.
- Refused to speak in interview except to deny charge of murder.



## Speech analysis (1)

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- Speech evidence was crucial to identify suspect.
- Search for suitable reference sample.
- ‘Coleman’ was a gambler and made heavy use of telephone betting agencies.
  - these agencies record incoming calls.



## Reference sample (phone calls to betting shop)



Hey mate give me an update on the rugby union um the um Munster versus Trevis(o)- T X thirty five thirty one five. And college basketball uh Florida versus Louisville. Could you tell me how much time there is left please? Florida and Louisville. **OK mate, cheers.**

Hey mate. College basketball. Oregon. T X thirty five thirty one five. (that's ?) uh just gimme an update how much time's left. So Oregon... you know... **you guys are betting on it.** Seventy fifty two. Cheers mate.

Hello mate. Could you- can you give me an update on the uh **Leicester versus Gwent** rugby union score? T X thirty five thirty one five. Right...

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## Criminal sample (from police car video)



Right. Yeah, he mentioned ... Right. Mm actually I don't have my driver's licence. From Leeds yeah. Canada.

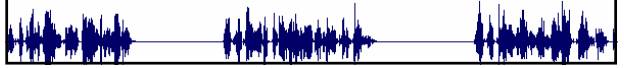
No, that's what I thought it was. F- f- I felt it. **I thought I had it.** (?) no I did not steal the car. No, I **don't have it, mate.** Don't have it, mate.













Are you sure it's coming out stolen? Did it come out? Wh- wh- what do y- what do you go by? (Yeah). Where was it stolen? What's he need now? Can you roll this window down a bit, I'm just claustrophobic. I'm on medication for it. Pardon? Can you let me out for a sec, I've got- I'm on medication for claustrophobia and anxiety. **Pardon?** Just- just the window down or something. What we waiting on? What we waiting on? Got to wait for vehicle recovery?

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## Speech analysis (2)

- Analysis then possible of:
  - consonant & vowel pronunciations
  - pitch
  - lexis
  - grammar
  - voice quality
  - rate
  - etc



	Crime sample (video track)	Reference (betting calls)
rhoticity 	 pardon	 Leicester <u>vers</u> us Gwent
't' = [d] 	 thought I had it	 you guys are be <u>tt</u> ing on it
mate ([e:]) 	 don't have it <u>mate</u>	 ok <u>mate</u> , cheers
[o:] 	 don't have it mate	 Springwood <u>Road</u>

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## Speech analysis (3)

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- Both crime & reference samples show highly distinctive mixture of US and Yorkshire features.
- JP French Associates' conclusion:

*Consistent and Exceptionally distinctive*








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## Speech analysis (4)

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- Faced with this evidence, 'Coleman' constructed a new defence story:
  - he was there in the stolen vehicle.
  - with another man who had similar speech patterns.
  - the other man was the killer.
  - he dare not reveal the killer's name, in fear of own life.






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## Speech analysis (5)

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- In court trial, Peter French summarised:
  - “One of the most distinctive voices I have encountered in 20 years' work”.
- He was found guilty, and was given life sentence.
- speech evidence essential in conviction.








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## Speech analysis (6)

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- Further investigation explained why 'Coleman' took such drastic action.
- Real name David Bieber
  - American citizen from Florida
  - Wanted for attempted murder and drugs offences in Florida
  - Also risked conviction of using fake identity and firearms in UK


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## 6.2 Authorship attribution

### 6.2.1 Text messaging

### 6.2.2 @mail extortion

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## 6.2.1 Text messaging Authorship attribution



“Criminals beware ...  
texting may lead the  
police to your door”

The Scotsman  
2008

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## Authorship attribution Text messaging (1)

- Linguistic analysis of text messaging has proved to be useful in the resolution of several UK murder cases.
- It is possible to distinguish writers by their written linguistic selections and co-selections.
- The research context is that:
  - sms's are sent from a mobile phone after the phone's owner has disappeared.
  - It is later on discovered that such person has been murdered.
  - And yet sms's from that phone are being sent and received after such person has disappeared and has been murdered.

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## Authorship attribution Text messaging (2)

Authorship attribution among several authors

- Acknowledgements:
  - Malcolm Coulthard
  - <http://www.youtube.com/watch?v=4z6Krsjwc84>
  - Tim Grant
  - <http://news.bbc.co.uk/2/hi/science/nature/7600769.stm>
- Centre for Forensic Linguistics - Aston University

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## Authorship attribution Text messaging (3)

### Disputed sms 1:

"hi jen tell jak **i am** ok know ever 1s gona b mad tell them **i am** sorry.living in scotland wiv my boyfriend.shitting **meself** dads gona kill me mum dont give a shite.hope nik didnt grass me up.keeping **phone** of.tell dad car jumps out of gear and stalls put it back in auction.tell him **i am** sorry"

(Sent to Jennifer Whelan on July 9, 2005)

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## Authorship attribution Text messaging (4)

### Disputed sms 2:

"Thought u wer grassing me up.mite b in trub wiv **me** dad told mum i was lving didnt giv a shit. **been2 kessick** camping was great. **ave2 go cya**"

(Sent to Nicola Gosnold on July 9, 2005)

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## Authorship attribution Text messaging (5)

### Disputed sms 3:

"Y do u h8 me i know mum does.told her i was goin. **i aint** cumin back and the pigs wont find me. **i am** happy living up here.every1 h8s me in rich only m8 i got is jak.txt u couple wks tell pigs **i am** nearly 20 **aint** cumin back they can shite off She got me in this shit its her fault not mine get blame 4evrything. **i am** sorry ok just **had 2 lve** shes a bitch no food in and always searching me room eating me sweets. **ave2 go** ok **i am** very sorry x"

(Sent to Brian Nicholl, Jenny's father, on July 14, 2005)

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## Authorship attribution Text messaging (6)

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**Non-disputed sms 1 (out of 11):**  
"Yeah shud b gud. I just **have2get** my finga out and do anotha tape"

**Non-disputed sms 2:**  
"Only just turned my **fone**. havent lied bout anything"

**Non-disputed sms 3:**  
"**im** tierd of defending **myself**. Theres no point. Bye.

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### Table 1 Contrastive markers in non-disputed & disputed texts

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Non-disputed texts (Jenny)	Disputed texts
<b>my</b> (my dad, myself)	<b>Me</b> (me dad, meself)
<b>cy</b> (for see you)	<b>cya</b>
<b>Fone</b>	<b>phone</b>
<b>im</b> (for I am, I'm)	<b>i am</b>
<b>have2get</b>	<b>been2 kessick</b>

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### Table 2 sms corpus (Tim Grant – CFL – Aston University)

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Sms (N)	5000
Writers (10/person)	500
Interactive	80
Independent	420

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## Conclusions Grant's study of sms corpus

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*Intra-writer sms messages are more similar than interactive sms messages.*

*Interactive sms messages are more similar than independently-produced sms messages.*

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## An old linguistic premise Text-messaging (7)

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- Rule-governed nature of language.
  - In the selection of words.
  - In the selection of the words that are selected to go with the former.

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## Final conclusions Text messaging (8)

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- The prosecution told the jury that the evidence could not just be due to chance and the defendant was convicted.
- The corollary for him is that if he hadn't sent those sms's, it's very unlikely that his crime would have been discovered.

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## 6.2.2 @mail extortion

### Authorship attribution

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- Qualitative analysis
- Statistical analysis of MATS
- Corpus linguistics



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## Authorship attribution

### @mail extortion (1)

### Authorship attribution to one author



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## Authorship attribution

### @mail extortion (1)

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- A company in the tourism sector had been accused of unfair dismissal by an employee who had tried to extort them.
- The **extortion** was expressed in one of the @mail letters (the disputed texts) written in Spanish,
  - whose authorship he denied later on.
  - that he had supposedly sent to the company in a period of time during which he was also writing some faxes (the non-disputed texts) from the French branch that the company had opened in the north of France some years before.




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### Table 3: DT@ & NDTfax

Data sets	Texts
DT@	doc01 doc02 doc03 doc04
NDTfax	doc05 doc06 doc07 doc08



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### @mail extortion (2)

### MATS analysis

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- Selection
- Pre-processing
- Morphosyntactic tagging
- Disambiguation and error correction
- Data extraction (Legolas 2.0.).
- Statistical analysis



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## Authorship attribution

### @mail extortion (3)


### MATS analysis

Morphosyntactic Annotated Tag Sequences


[...]*el ruido del mar arrullaba las siestas de los barceloneses* [...].


es	el	ruido	de	el	mar	arrullab	as	siestas	de	los	barceloneses	es
...	AMPT	NS-MS	P	AMS	NS-MS	VDA6S-	AFP	NS-FP	P	AMP	NS-MP	...

bigrams



trigrams





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# Legolas 2.0

## Morpho-syntactic n-grams Data extraction program

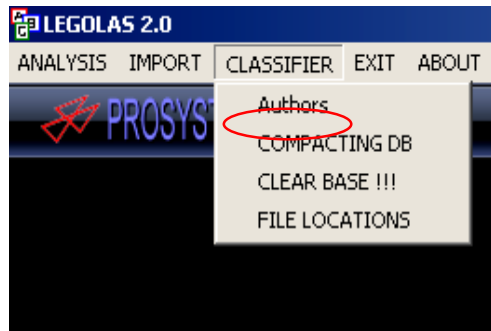
### Brief introduction to its functions

- It retrieves morpho-syntactic n-grams i.e. sequences of tags that define each word's category in an morpho-syntactically annotated text.
- It calculates the frequency of the morphosyntactic n-grams found in the processed texts and exports data to an .xls file
- It allows n-gram search.
- It is programmed to extract two types of n-grams:
  - Bigrams – two-tag sequences.
  - Trigrams – three-tag sequences.

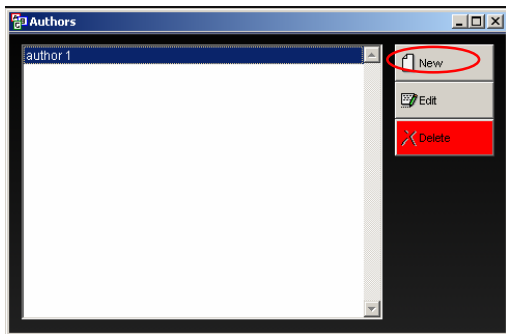
### Steps to data extraction

- Definition of authors and text groups.
- Importation of texts.
- Selection of texts to be analyzed.
- Text analysis.

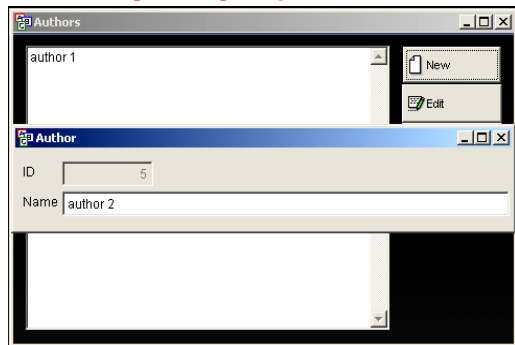
### Defining text groups/authors (1)



### Defining text groups (2)



### Defining text groups/authors (3)



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### Feeding texts 1

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### Feeding texts (2)

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### Feeding texts 3

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### Feeding texts (4)

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### Selecting and analyzing texts (1)

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### Selecting and analyzing texts (2)

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### Search options (1)

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### Search options (2)

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	unit 1	word 1	unit 2	word 2
AMS	el , el	N5	pasaje , p	
AMS	el , el	N5	releva , r	
AMS	El , el	N5	resto , re	
AMS	El , el	N5	conjunto ,	
AMS	el , el	N5	escudo , e	
AMS	el , el	N5	yelmo , ye	
AMS	el , el	N5	dibujo , d	
AMS	el , el	N5	mural , mu	
AMS	el , el	N5	talento ,	
AMS	el , el	N5	sonido , s	
AMS	l , el	N5	obturador	
AMS	el , el	N5	encadre ,	
AMS	El , el	N5	mural , mu	

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### Search options (3)

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	unit 1	word 1	unit 2	word 2	unit 3	word 3
P	para , para	AMS	el , el	N5	dibuj , dibuj	
P	con , con	AMS	el , el	N5	talento , talent	
P	por , por	AMS	el , el	N5	sonido , sonid	
P	de , de	AMS	l , el	N5	obturador , ob	
P	a , de	AMS	l , el	N5	exterior , este	
P	de , de	AMS	l , el	N5	conduccio , coi	
P	en , en	AMS	el , el	N5	acantilado , ac	
P	a , de	AMS	l , el	N5	pueblo , puebl	
P	a , de	AMS	l , el	N5	futuro , futuro	
P	a , de	AMS	l , el	N5	tiempo , tiempo	
P	por , por	AMS	el , el	N5	abarricada , abar	
P	de , de	AMS	l , el	N5	mural , mural	
P	de , de	AMS	l , el	N5	hombre , homi	
P	en , en	AMS	el , el	N5	magia , magn	

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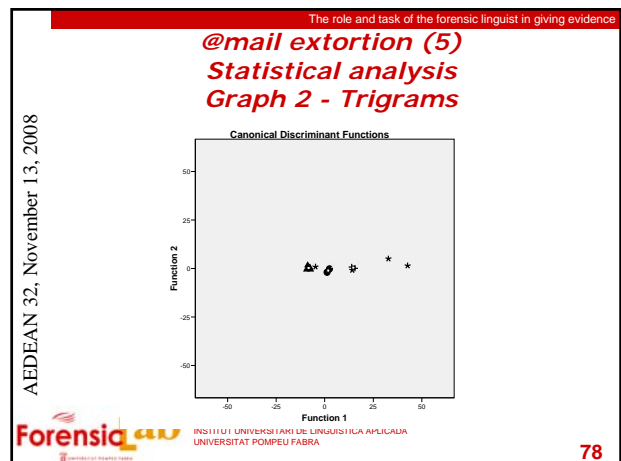
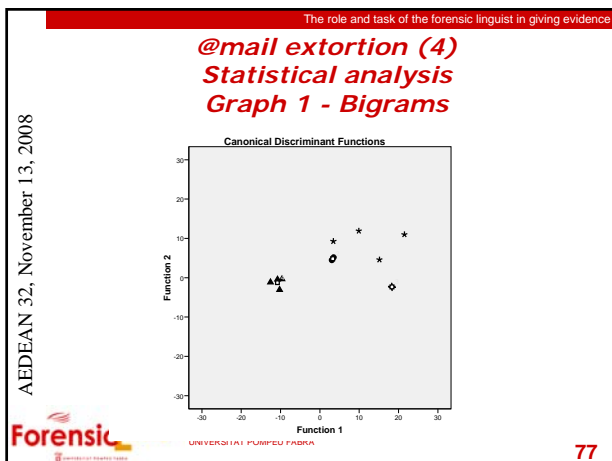
### Search options (4)

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	word 1	word 2	code
plerde	perder	VDR3S-	
plerde	perder	VDR3S-	
hay	haber	VDR3S-	
Hay	haber	VDR3S-	
es	ser	VDR3S-	
est&aaacute;	estar	VDR3S-	
es	ser	VDR3S-	
ha	haber	VDR3S-	
existe	existir	VDR3S-	
ha	haber	VDR3S-	
puede	poder	VDR3S-	
ha	haber	VDR3S-	
ve	ver	VDR3S-	
est&aaacute;	estar	VDR3S-	
Hay	haber	VDR3S-	
es	ser	VDR3S-	
introduce	introducir	VDR3S-	
ha	haber	VDR3S-	

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**@mail extortion (6)**  
**Corpus linguistics**  
**Relative pronoun**

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1. **doc05 (NDTfax)**

'(...) antes de la baja por enfermedad del Sr. XXX, **el cual** tenía que estar allí durante 1 o 2 días'.

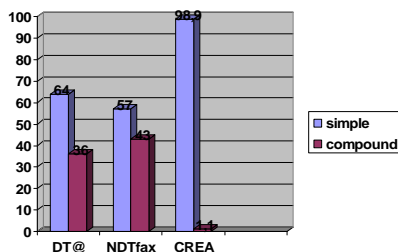
2. **doc03 (DT@)**

'Acabo de leer tu mail, **el cual** te agradezco, pero no me subestimes'.

**@mail extortion (7)**  
**Corpus linguistics**  
**Relative pronoun**

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Graph 3: Distribution of simple/compound Spanish relative pronoun in DT@, NDTfax & CREA



**6.3 Plagiarism detection**

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**The case**

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- Already been decided.
- In 1993, Vázquez Montalbán was found guilty – Judgment 1268 of the Supreme Court, Madrid, 29 December 1993.
- of having plagiarized Pujante’s translation of *Julius Caesar* (Espasa Calpe, 1987) into Spanish,
- and having incorporated into his own translation almost the whole of Pujante’s translation without his permission.

**Corpus**

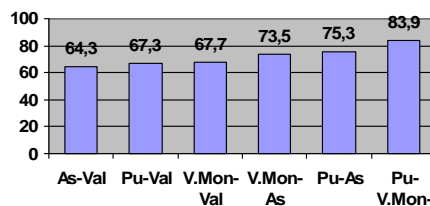
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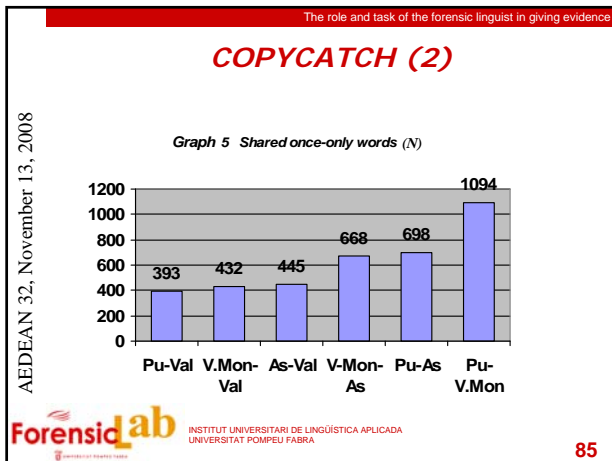
- Astrana Marín (1961).
- Valverde (1968).
- Pujante (1987). – the **plagiarised** translation.
- Vázquez Montalbán (1988). – the **disputed** translation.

**COPYCATCH (1)**

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Graph 4 Intertranslation overlapping vocabulary (%)





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## COPYCATCH (3)

Unique vocabulary (%)

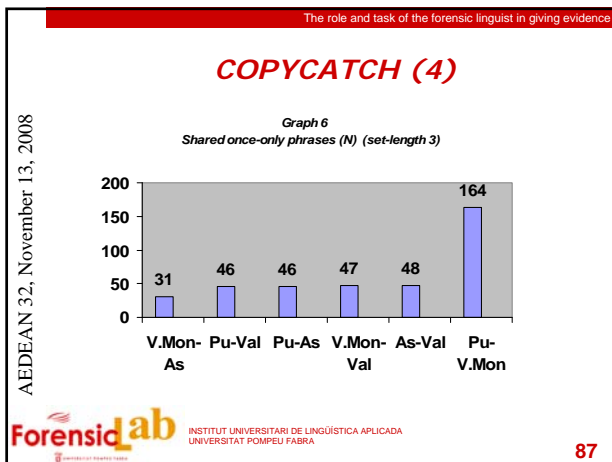
Table 4

As-Val		Pu-Val		V.Mon-Val		V.Mon-As		Pu-As		V.Mon-Pu	
As	45.5	Pu	41.2	V.Mon	40.9	V.Mon	28.5	Pu	32.6	V.Mon-	17.7
Val	25.4	Val	27.5	Val	24.8	As	33.0	As	25.6	Pu	20.3

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## 7. In my opinion...

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- ## Probability scale
- AEDEAN 32, November 13, 2008
- **Most positive**
  - 5 ..... 'I personally feel *quite satisfied* that ... is
  - 4 ..... 'It is in my view *very likely* that ... is
  - 3 ..... 'It is in my view *likely* that ... is
  - 2 ..... 'It is in my view *fairly likely* that ... is
  - 1 ..... 'It is in my view *rather more likely than not* ... is
  - 0 ..... 'It is in my view *possible* that ... is
  - -1 ..... 'It is in my view *rather more likely than not* that ... is *not*
  - -2 ..... 'It is in my view *fairly likely* that ... is *not*
  - -3 ..... 'It is in my view *likely* that ... is *not*
  - -4 ..... 'It is in my view *very likely* that ... is *not*
  - -5 ..... 'I personally feel *quite satisfied* that ... is the *not*
  - **Most negative**
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## 8. Future perspectives

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**Idiolectometria**  
aplicada a la Lingüística Forense

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- *Idiolectometria aplicada a la Lingüística Forense*  
<http://www.iula.upf.edu/rec/ideolec>
- EXPLORA-INGENIO HUM2007-29140-E
- 2007-2008
- *Idiolectometria forense e Índice de Similitud Idiolectal*
- PLAN-NACIONAL FFI2008-03583-FILO
- 2008-2010

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**Idiolectometry**

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- An emerging discipline which studies the idiolect.
- So, far this discipline has
  - measured the linguistic distance between speakers.
  - established the borderline between different idiolects.
- In these projects we will explore and develop the possibility of measuring
  - the linguistic differences existing between idiolects.
  - each individual's idiolectal distance.
- so that an **Index of Idiolectal Similitude (IIS)** - which will compare several linguistic samples and calculate the linguistic distance between them - can be obtained.

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**Index of Idiolectal Similitude (IIS)**

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- Needed in order to establish what kind of idiolectal similitude one needs to have before one can say that two linguistic samples (spoken or written) have been produced by the same person
- This will help linguists acting as expert witnesses in court to identify speakers or writers by comparing:
  - a **disputed** recording or written text.
  - a set of **non-disputed** spoken or written texts.
- By considering different linguistic parameters and modules (phonological, morphosyntactic, discourse-pragmatic),
  - a protocol will be devised in order to set up the **IIS**,
  - and then it will be possible to decide whether or not two recordings or two written texts have been produced by the same person.

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**Future outcomes**

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- I utterly believe that these and similar projects contribute data and results on FI methodology and can help in the establishment of a *base-rate knowledge* of population distribution in all FL areas, and not just in FP&A, and this fact in turn helps in the development and consolidation of Forensic Linguistics as a whole.

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**Final remarks**

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- My view is that we need to refine our linguistic methods and techniques, and make them as valid and as reliable as possible,
  - so that this “room for manoeuvre” is reduced and,
  - in turn, our opinions as forensic linguists are more scientifically grounded.

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**Thank you**

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