Charlatanry in Forensic Speech Science
A Problem to be Taken Seriously
Anders Erikkson and Francisco Lacerda

Presentation: Erica Cooper
Background: Polygraphs

- Estimated 61% accuracy
- Subject to countermeasures
- US court admissibility: up to individual jurisdictions
- Not admissible in Germany, Canada, Israel, India
- Voice-based lie detection is newer and less regulated
Voice Stress Analysis (VSA): Claims

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**SCIENCE!!!
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Diogenes Lantern: Only sensitive at 20-40Hz range.
Reliability Studies

- Damphousse et al. (2007)
- Oklahoma County Jail drug arrestees
- Ground truth known from drug test
- No support for VSA found
- Poor inter-user reliability
- Reliability vs. Validity
Layered Voice Analysis (LVA): Claims

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- Patented, cutting-edge technology....
Nemesysco LVA

- 500 lines of Visual Basic
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- Computes statistics on various meaningless sampling artifacts
Thorns and Plateaus

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## Variable Definitions

Table 1: Variable descriptions (modified from Haddad et al. 2002)

<table>
<thead>
<tr>
<th>Variable</th>
<th>As described to the user</th>
<th>As defined in the program</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPT</td>
<td>A numeric value describing the relatively high frequency range. Vericat...</td>
<td>The average number of thorns</td>
</tr>
<tr>
<td>SPJ</td>
<td>A numeric value describing the relatively low frequency range. Vericat...</td>
<td>The average number of plateaus per sample</td>
</tr>
<tr>
<td>JQ</td>
<td>A numeric value describing the distribution uniformity of the relativity low frequency range. Vericat...</td>
<td>The standard error of plateau length</td>
</tr>
<tr>
<td>AVJ</td>
<td>A numeric value describing the average range of the relativity low frequency range. Vericat...</td>
<td>The average plateau length</td>
</tr>
</tbody>
</table>
Use

- Insurance companies
- Banks
- UK Department for Work and Pensions
- The “Bogus Pipeline Effect”
Afterword

- *Nemesysco* threatens lawsuit
- IJSLL retracts the article
- Even more publicity: Language Log, Wikipedia, Reddit, Slashdot, ....