PsychoTémoins/ INIST-CNRS
http://psychotemoins.inist.fr

Fiche Biblio n° 3. La recherche scientifique sur les portraits-robots

Frank Arnould
INIST-CNRS
frank.arnould@inist.fr

Publié le 31 juillet 2013
http://psychotemoins.inist.fr/?Fiche-biblio-no-3-La-recherche

C'est en Angleterre, en 1910, que le portrait-robot, sous la forme d'un croquis du criminel, est utilisé pour la première fois dans l'histoire judiciaire. Il a contribué à l'arrestation du Docteur Crippen, soupçonné du meurtre de son épouse, alors qu'il tentait de fuir son pays à bord d'un paquebot transatlantique.

En France, c'est au cours de l'enquête sur le meurtre d'Eugénie Bertrand, en 1953, que le portrait-robot fait sa première apparition. Son utilisation s'est d'ailleurs soldée par un échec. Les enquêteurs ont utilisé une technique conçue quelque temps plus tôt par Roger Dambron. L'inventeur avait découpé des photographies de personnes, l'assemblage des morceaux permettant ensuite de créer des visages nouveaux.

Malgré l'ancienneté de la méthode, la recherche scientifique sur les portraits-robots n'a véritablement démarré que dans le courant des années 1970 (voir la bibliographie ci-dessous). Un consensus s'est dégagé de ces travaux : dans leurs formes classiques (croquis d'artiste, systèmes mécaniques ou informatisés d'assemblage de traits faciaux), les portraits-robots produisent généralement des représentations peu fidèles des visages.

Comment expliquer ce résultat décevant ? Les chercheurs considèrent généralement que nous analysons les visages de manière globale (un mode de traitement dit configural ou holistique). Or, la méthode des portraits-robots impose aux témoins oculaires d'aborder les visages trait par trait. Ce mode de traitement serait donc incompatible avec la manière habituelle dont nous percevons et reconnaissons les visages.

Les chercheurs ne s'avouent toutefois pas vaincus et plusieurs équipes tentent d'améliorer la technique en suivant différentes pistes, comme l'ajout d'un entretien holistique (afin d'encourager le témoin à penser à la configuration globale du visage), le morphing de portraits-robots de témoins différents (qui produit une représentation plus fidèle d'un visage que les portraits-robots individuels de chaque témoin), ou encore le développement de logiciels évolutionnistes (dits aussi darwiniens) pour la construction de portraits-robots (EvoFIT, EFIT-V, ID…) reposant sur le principe du traitement holistique des visages.

À lire également sur PsychoTémoins

Sous-rubrique *Actualités de la recherche – Portraits-robots*

Bibliographie

Sauf exception, n'ont été retenus que les articles publiés dans revues scientifiques à comité de lecture.

Bleiman, F. (1978). Automatic comparison of criminal records photographic file with identikit and photofit pictures. *International Criminal Police Review*, *33*(319), 182183.

Brace, N. A., Pike, G. E., Allen, P., & Kemp, R. I. (2006). Identifying composites of famous faces: Investigating memory, language and system issues. *Psychology, Crime & Law*, *12*(4), 351366. doi:10.1080/10683160500151159

Brace, N., Pike, G., Kemp, R., Turner, J., & Bennett, P. (2006). Does the presentation of multiple facial composites improve suspect identification? *Applied Cognitive Psychology*, *20*(2), 213226. doi:10.1002/acp.1181

Bruce, V., Ness, H., Hancock, P. J. B., Newman, C., & Rarity, J. (2002). Four heads are better than one: Combining face composites yields improvements in face likeness. *Journal of Applied Psychology*, *87*(5), 894902. doi:10.1037/0021-9010.87.5.894

Carlson, C. A., Gronlund, S. D., Weatherford, D. R., & Carlson, M. A. (2012). Processing differences between feature-based facial composites and photos of real faces. *Applied Cognitive Psychology*, *26*(4), 525–540. doi:10.1002/acp.2824

Charman, S. D., Gregory, A. H., & Carlucci, M. (2009). Exploring the diagnostic utility of facial composites: Beliefs of guilt can bias perceived similarity between composite and suspect. *Journal of Experimental Psychology: Applied*, *15*(1), 7690. doi:10.1037/a0014682

Christie, D., Davies, G., Shepherd, J., & Ellis, H. (1981). Evaluating a new computer-based system for face recall. *Law and Human Behavior*, *5*(2-3), 209218. doi:10.1007/BF01044764

Christie, D. F., & Ellis, H. D. (1981). Photofit constructions versus verbal descriptions of faces. *Journal of Applied Psychology*, *66*(3), 358363. doi:10.1037/0021-9010.66.3.358

Comish, S. E. (1987). Recognition of facial stimuli following an intervening task involving the Identi-kit. *Journal of Applied Psychology*, *72*(3), 488491. doi:10.1037/0021-9010.72.3.488

Cutler, B., Stocklein, C. J., & Penrod, S. D. (1988). Empirical examination of computerised facial composite production system. *Forensic Reports*, *1*, 207218.

Davies, G.M. (1986). Capturing likeness in eyewitness composites: The police artist and his rivals. *Medicine, Science and the Law*, *26*(4), 283290.

Davies, G. M. (1999). The impact of character attribution on composite production: A real world effect? *Current Psychology*, *18*(1), 128-139. doi:10.1007/s12144-999-1022-2

Davies, G. M., & Christie, D. (1982). Face recall: An examination of some factors limiting composite production accuracy. *Journal of Applied Psychology*, *67*(1), 103109. doi: 10.1037/0021-9010.67.1.103

Davies, G.M., Ellis, H.D., & Christie, D. (1981). Exploring new strategies for facial recall. *Medicine, Science and the Law*, *21*(2), 137145.

Davies, G.M.., Ellis, H., & Shepherd, J. (1977). Cue saliency in faces as assessed by the « Photofit » technique. *Perception*, *6*(3), 263269. doi:10.1068/p060263

Davies, G.M.., Ellis, H.D., & Shepherd, J. (1978a). Face identification: The influence of delay upon accuracy of photofit construction. *Journal of Police Science and Administration*, *6*(1), 3542.

Davies, G. M., Ellis, H. D., & Shepherd, J. (1978b). Face recognition accuracy as a function of mode of representation. *Journal of Applied Psychology*, *63*(2), 180187. doi: 10.1037/0021-9010.63.2.180

Davies, G. M., Ellis, H. D., & Shepherd, J. (1985). Wanted - Faces that fit the bill: Indentikit or Photofit pictures issued by police are often built on misleading assumptions. *New Scientist*, (1456), 2629.

Davies, G.M., & Little, M. (1990). Drawing on memory: exploring the expertise of a police artist. *Medicine,Science, and the Law*, *30*(4), 345353.

Davies, G. M, & Milne, A. (1985). Eyewitness Composite Production A Function of Mental or Physical Reinstatement of Context. *Criminal Justice and Behavior*, *12*(2), 209220. doi: 10.1177/0093854885012002004

Davies, G. M., Milne, A., & Shepherd, J. (1983). Searching for operator skills in face composite reproduction. *Journal of Police Science & Administration*, *11*(4), 405409.

Davies, G. M., Shepherd, J., & Ellis, H. D. (1978). Remembering faces: Acknowledging our limitations. *Journal of the Forensic Science Society*, *18*(1-2), 1924.

Davies, G. M., Shepherd, J., Flin, R., & Ellis, H.D. (1986). Training skills in police Photofit operators, *Policing, 2*(1), 3546.

Davies, G. M., van der Willik, P., & Morrison, L. J. (2000). Facial composite production: A comparison of mechanical and computer-driven systems. *Journal of Applied Psychology*, *85*(1), 119124. doi:10.1037/0021-9010.85.1.119

Davies, G. M., & Valentine, T. (2007). Facial composites: Forensic utility and psychological research. In R. C. L. Lindsay, D. F. Ross, J. D. Read, & M. P. Toglia (Éds.), *Handbook of Eyewitness Psychology* (Vol. 2, Memory for People, p. 5986). Mahwha: Lawrence Erlbaum Associates.

Davies, S. (2009). The effects of stress levels on the construction of facial composites. *Diffusion*, *2*(1). En ligne.

Dekle, D. J. (2006). Viewing composites sketches: Lineups and showups compared. *Applied Cognitive Psychology*, *20*(3) 383395. doi:10.1002/acp.1185

Demarchi, S. (2011). Les témoignages, pièges à conviction, *Dossier Pour la science*, (70), 7277.

Ellis, H.D., Davies, G. M., & Shepherd, J. (1978). A critical examination of the Photofit System for recalling faces. *Ergonomics*, *21*(4), 297307. doi:10.1080/00140137808931726

Ellis, H.D., Davies, G. M., & McMurran, M. M. (1979). Recall of White and Black Faces by White and Black Witnesses Using the Photofit System. *Human Factors*, *21*(1), 5559. doi: 10.1177/001872087902100107

Ellis, H.D., Shepherd, J., & Davies, G.M. (1975). An investigation of the use of the Photo-Fit technique for recalling faces. *British Journal of Psychology*, *66*(1), 29–37. doi:10.1111/j. 2044-8295.1975.tb01437.x

Ellis, H.D., Shepherd, J. W., Klin, R. H., & Davies, G. M. (1989). Identification from a computer-driven retrieval system compared with a traditional mug-shot album search: a new tool for police investigations. *Ergonomics*, *32*(2), 167177. doi:10.1080/00140138908966077

Flin, R., Markham, R., & Davies, G.M. (1989). Making faces: Developmental trends in the construction and recognition of photofit face composites. *Journal of Applied Developmental Psychology*, *10*(2), 131145. doi:10.1016/0193-3973(89)90001-4

Frowd, C.., Bruce, V., Chang, H. Y., Plenderleith, Y., McIntyre, A. H., & Hancock, P. J. B. (2008). Predict your child: A system to suggest the facial appearance of children. *Journal of Multimedia*, *3*(1), 2835. doi:10.4304/jmm.3.1.28-35

Frowd, C., Bruce, V., McIntyre, A., & Hancock, P. (2007). The relative importance of external and internal features of facial composites. *British Journal of Psychology*, *98*(1), 6177. doi: 10.1348/000712606X104481

Frowd, C., Bruce, V., McIntyre, A., Ross, D. F., Fields, S., Plenderleith, Y., & Hancock, P. J. B. (2006). Implementing holistic dimensions for a facial composite system. *Journal of Multimedia, 1*(3), 42-51. doi:10.4304/jmm.1.3.42-51

Frowd, C., Bruce, V., Ness, H., Bowie, L., Paterson, J., Thomson-Bogner, C., … Hancock, P. J. B. (2007). Parallel approaches to composite production: interfaces that behave contrary to expectation. *Ergonomics*, *50*(4), 562585. doi:10.1080/00140130601154855

Frowd, C., Bruce, V., Pitchford, M., Gannon, C., Robinson, M., Tredoux, C., … Hancock, P. J. B. (2010). Evolving the memory of a criminal's face: Methods to search a face space more effectively. *Soft Computing*, *14*(1), 8190. doi:10.1007/s00500-008-0391-z

Frowd, C., Bruce, V., Pitchford, M., Gannon, C., Robinson, M., Tredoux, C., … Hancock, P. J. B. (2011). Evolving the face of a criminal: How to search a face space more effectively. *Soft Computing*, *15*(1), 6170. doi:10.1007/s00500-009-0518-x

Frowd, C., Bruce, V., Ross, D., McIntyre, A., & Hancock, P. B. (2007). An application of caricature: How to improve the recognition of facial composites. *Visual Cognition*, *15*(8), 954984. doi: 10.1080/13506280601058951

Frowd, C.., Bruce, V., Smith, A. J., & Hancock, P. J. B. (2008). Improving the quality of facial composites using a holistic cognitive interview. *Journal of Experimental Psychology: Applied*, *14*(3), 276287. doi:10.1037/1076-898X.14.3.276

Frowd, C., Carson, D., Ness, H., McQuiston-Surrett, D., Richardson, J., Baldwin, H., & Hancock, P. (2005). Contemporary composite techniques: The impact of a forensically-relevant target delay. *Legal and Criminological Psychology*, *10*(1), 6381. doi:10.1348/135532504X15358

Frowd, C., Carson, D., Ness, H., Richardson, J., Morrison, S., McLanaghan, S., & Hancock, P. J. B. (2005). A forensically valid comparison of facial composite systems. *Psychology, Crime & Law*, *11*(1), 3352. doi:10.1080/10683160310001634313

Frowd, C., Hancock, P. J. B., Bruce, V., Skelton, F. C., Atherton, C., Nelson, L., … others. (2011). Catching more offenders with EvoFIT facial composites: Lab research and police field trials. *Global Journal of Human Social Science*, *11*(3), 4658.

Frowd, C., & Hepton, G. (2009). The benefit of hair for the construction of facial composite images. *British Journal of Forensic Practice*, *11*(4), 1526. doi:10.1108/14636646200900025

Frowd, C., Lee, C., Petkovic, A., Nawaz, K., & Bashir, Y. (2009). Further automating and refining the construction and recognition of facial composite images. *International Journal of Bio-Science and Bio-Technology*, *1*(1), 5974.

Frowd, C., McQuiston-Surrett, D., Anandacivas, S., Ireland, C. G., & Hancock, P. J. B. (2007). An evaluation of US systems for facial composite production. *Ergonomics*, *50*(12), 19871998.

Frowd, C., Pitchford, M., Bruce, V., Jackson, S., Hepton, G., Greenall, M., … Hancock, P. J. B. (2011). The psychology of face construction: Giving evolution a helping hand. *Applied Cognitive Psychology*, *25*(2), 195203. doi:10.1002/acp.1662

Frowd, C., Ramsay, S., & Hancock, P. J. B. (2011). The influence of holistic interviewing on hair perception for the production of facial composites. *International Journal of Bio-Science and Bio-Technology*, *3*(3), 5564.

Frowd, C., Skelton, F. C., Butt, N., Hassan, A., Fields, S., & Hancock, P. J. B. (2011). Familiarity effects in the construction of facial-composite images using modern software systems. *Ergonomics*, *54*(12), 11471158. doi:10.1080/00140139.2011.623328

Frowd, C., & Fields, S. (2011). Verbalization effects in facial composite production. *Psychology, Crime & Law*, *17*(8), 731744. doi:10.1080/10683161003623264

Frowd, C., Hancock, P. J. B., & Carson, D. (2004). EvoFIT: A holistic, evolutionary facial imaging technique for creating composites. *Assocation for Computing Machinery Transactions on Applied Psychology*, *1*(1), 19–39. doi:10.1145/1008722.1008725

Frowd, C., Nelson, L., Skelton, F., Noyce, R., Atkins, R., Heard, P., … Hancock, P. J. B. (2012). Interviewing techniques for darwinian facial-composite systems. *Applied Cognitive Psychology*, *26*(4), 576–584. doi:10.1002/acp.2829

Frowd, C., Skelton, F., Atherton, C., Pitchford, M., Bruce, V., Atkins, R., Hancock, P. J. B. (2012). Understanding the multiframe caricature advantage for recognizing facial composites. *Visual Cognition*, *20*(10), 12151241. doi:10.1080/13506285.2012.743936

Frowd, C., Skelton, F., Atherton, C., Pitchford, M., Hepton, G., Holden, L., … Hancock, P. J. B. (2012). Recovering faces from memory: The distracting influence of external facial features. *Journal of Experimental Psychology: Applied*, *18*(2), 224238. doi:10.1037/a0027393

Frowd, C., Skelton, F., Hepton, G., Holden, L., Minahil, S., Pitchford, M., … Hancock, P. J. B. (2013). Whole-face procedures for recovering facial images from memory. *Science & Justice*, *53*(2), 8997. doi:10.1016/j.scijus.2012.12.004

Gawrylowicz, J., Gabbert, F., Carson, D., Lindsay, W. R., & Hancock, P. J. B. (2012). Holistic versus featural facial composite systems for people with mild intellectual disabilities. *Applied Cognitive Psychology*, *26*(5), 716–720. doi:10.1002/acp.2850

Gibling, F., & Bennett, P. (1994). Artistic enhancement in the production of photo-fit likenesses: An examination of its effectiveness in leading to suspect identification. *Psychology, Crime & Law*, *1*(1), 93100. doi:10.1080/10683169408411939

Gibson, S. J., Solomon, C. J., Maylin, M. I. S., & Clark, C. (2009). New methodology in facial composite construction: From theory to practice. *International Journal of Electronic Security and Digital Forensics*, *2*(2), 156168. doi:10.1504/IJESDF.2009.024900

Green, D. L., & Geiselman, R. E. (1989). Building composite facial images: Effects of feature saliency and delay of construction. *Journal of Applied Psychology*, *74*(5), 714721. doi: 10.1037/0021-9010.74.5.714

Hancock, P. J., Bruce, V., & Burton, M. A. (1998). A comparison of two computer-based face identification systems with human perceptions of faces. *Vision research*, *38*(15-16), 22772288.

Hancock, P.J.B., Burke, K., & Frowd, C. D. (2011). Testing facial composite construction under witness stress. *International Journal of Bio-Science and Bio-Technology*, *3*(3), 6571.

Hancock, Peter J. B. (2000). Evolving faces from principal components. *Behavior Research Methods, Instruments, & Computers*, *32*(2), 327333. doi:10.3758/BF03207802

Hasel, L. E., & Wells, G. L. (2007). Catching the bad guy: Morphing composite faces helps. *Law and Human Behavior*, *31*(2), 193207. doi:10.1007/s10979-006-9007-2

Jenkins, F., & Davies, G. (1985). Contamination of facial memory through exposure to misleading composite pictures. *Journal of Applied Psychology*, *70*(1), 164176. doi: 10.1037/0021-9010.70.1.164

Kempen, K., & Tredoux, C. G. (2012). « Seeing is believing »: The effect of viewing and constructing a composite on identification performance. *South African Journal of Psychology*, *42*(3), 434444.

King, D. (1971). The use of Photofit 1970-1971: A progress report. *Police Research Bulleting*, *18*, 4044.

Koehn, C. E., & Fisher, R. P. (1997). Constructing facial composites with the mac-a-mug pro system. *Psychology, Crime & Law*, *3*(3), 209218. doi:10.1080/10683169708410815

Kovera, M. B., Penrod, S. D., Pappas, C., & Thill, D. L. (1997). Identification of computer-generated facial composites. *Journal of Applied Psychology*, *82*(2), 235246. doi: 10.1037/0021-9010.82.2.235

Laughery, K. R., & Fowler, R. H. (1980). Sketch artist and Identi-kit procedures for recalling faces. *Journal of Applied Psychology*, *65*(3), 307316. doi:10.1037/0021-9010.65.3.307

Lech, A. M., & Johnston, R. (2011). The relative utility of verbal descriptions and facial composites in facial identifications. *International Journal of Bio-Science and Bio-Technology*, *3*(3), 116.

Lee, E., & Whalen, T. (1995). Computerized feature retrieval of images: suspect identification. *Ergonomics*, *38*(9), 19411957. doi:10.1080/00140139508925242

Luu, T. N., & Geiselman, R. E. (1993). Cognitive retrieval techniques and order of feature construction in the formation of composite facial images. *Journal of Police and Criminal Psychology*, *9*(1), 3439. doi:10.1007/BF02901650

Marks, P. (2005). How to recall the face that fits. *New Scientist*, *185*(2491), 24.

Masip, J., Garrido, E., Herrero, C., Ullán, A. M., & Conde, J. (2012). Teaching students about facial composites using the FACES software. *Teaching of Psychology*, *39*(2), 137141. doi: 10.1177/0098628312437701

Matthews, M. L. (1978). Discrimination of Identikit constructions of faces: Evidence for a dual processing strategy. *Perception & Psychophysics*, *23*(2), 153161. doi:10.3758/BF03208296

Mauldin, M. A., & Laughery, K. R. (1981). Composite production effects on subsequent facial recognition. *Journal of Applied Psychology*, *66*(3), 351357. doi:10.1037/0021-9010.66.3.351

Mcnamara, J. M. (2009). Comment sketchy eyewitness-identification procedures: A proposal to draw up legal guidelines for the use of facial composites in criminal investigations. *Wisconsin Law Review*, *2009*(3), 763799.

McNeil, J. E., Wray, J. L., Hibler, N. S., Foster, W. D., & et al. (1987). Hypnosis and Identi-Kit: A study to determine the effect of using hypnosis in conjunction with the making of Identi-Kit composites. *Journal of Police Science & Administration*, *15*(1), 6367.

McQuiston-Surrett, D., Topp, L. D., & Malpass, R. S. (2006). Use of facial composite systems in US law enforcement agencies. *Psychology, Crime & Law*, *12*(5), 505517. Doi: 10.1080/10683160500254904

McQuiston-Surrett, D., & Topp, L. D. (2008). Externalizing visual images: Examining the accuracy of facial descriptions vs. composites as a function of the own-race bias. *Experimental Psychology*, *55*(3), 195202. doi:10.1027/1618-3169.55.3.195

Oswald, K. M., & Coleman, M. L. (2007). Memory demands on facial composite identification. *Applied Cognitive Psychology*, *21*(3), 345360. doi:10.1002/acp.1276

Paine, C. B., Pike, G. E., Brace, N. A., & Westcott, H. L. (2008). Children making faces: The effect of age and prompts on children's facial composites of unfamiliar faces. *Applied Cognitive Psychology*, *22*(4), 455474. doi:10.1002/acp.1374

Rhodes, M. L. (1977). Computer aided facial image generation using Identi-kit features. *Ky Univ Off Res Eng Serv Bull*, (113), 113112.

Shepherd, J., Ellis, H. D., McMurran, M., & Davies, G. M. (1978). Effect of character attribution on Photofit construction of a face. *European Journal of Social Psychology*, *8*(2), 263–268. doi: 10.1002/ejsp.2420080210

Skelton, F., Frowd, C., & Andrews, S. (2011). Witness interviews: Does recall of relational information improve identifiability of a facial composite? *International Journal of Security and its Applications*, *5*(4), 3748.

Solomon, C. J., Gibson, S. J., & Mist, J. J. (2013). Interactive evolutionary generation of facial composites for locating suspects in criminal investigations. *Applied Soft Computing*, *13*(7), 32983306. doi:10.1016/j.asoc.2013.02.010

Strathie, A., McNeill, A., & White, D. (2012). In the Dock: Chimeric Image Composites Reduce Identification Accuracy. *Applied Cognitive Psychology*, *26*(1), 140148. doi:10.1002/acp.1806

Valentine, T., Davis, J. P., Thorner, K., Solomon, C., & Gibson, S. (2010). Evolving and combining facial composites: Between-witness and within-witness morphs compared. *Journal of Experimental Psychology: Applied*, *16*(1), 7286. doi:10.1037/a0018801

Vazel, M.-A. (2002). *Proposition d'une méthodologie d'élaboration des portraits-robot* (Thèse de doctorat). Université de Rennes 2.

Wells, G.L., & Hasel, L. E. (2007). Facial composite production by eyewitnesses. *Current Directions in Psychological Science*, *16*(1), 610. doi:10.1111/j.1467-8721.2007.00465.x

Wells, Gary L., Charman, S. D., & Olson, E. A. (2005). Building face composites can harm lineup identification performance. *Journal of Experimental Psychology: Applied*, *11*(3), 147156. doi: 10.1037/1076-898X.11.3.147

Wogalter, M. S., & Marwitz, D. B. (1991). Face composite construction: In-view and from-memory quality and improvement with practice. *Ergonomics*, *34*(4), 459468. doi: 10.1080/00140139108967329

Yu, C. J., & Geiselman, R. E. (1993). Effects of Constructing Identi-Kit Composites on Photospread Identification Performance. *Criminal Justice and Behavior*, *20*(3), 280292. doi: 10.1177/0093854893020003005