

# live Scent : evil Stench

*This (not so) Perfect (Smelling) Day*



live	evil
live	veil

← energetic happy calm good lively peaceful | anxious irritable fearful sad tired depressed →

# Background: *A Science Fashion Story*

- Senior Research Fellow, Central Saint Martins **Scentsory Design®**
- Founder / Creative Director **Sensory Design & Technology Ltd**, Cambridge
- Visiting Scholar - Institute of Biotechnology, University of Cambridge
- PhD Textiles - Royal College of Art
- BA Fashion Communication - Central Saint Martins
- Fashion Stylist / Sensory Designer - Charmed Technology (MIT Media Lab)
- Inspiration: Science Fiction + Healthcare sector (Mental Health, HIV & AIDS)

# Charmed Technology Inc

MIT Media Lab High-tech spinout : WEARABLE COMPUTING

## 'Brave New Unwired World' show 2000



Prof Sandy Pentland



Prof Thad Starner



'Twiddler' keyboard



... wireless  
everywear

# Charmed Technology Inc

'Brave New Unwired World' 2000: London, Berlin, NYC, Seoul, Sydney



Aroma Badge



SolarCool



ScentreFace



PheroMATE



VitaWare



SmartSecondSkin



BionicBoxer



Osmical Fashion





# Scentsory Design®

*Central Saint Martins / University of Cambridge*

***Break the tradition of scent delivery***

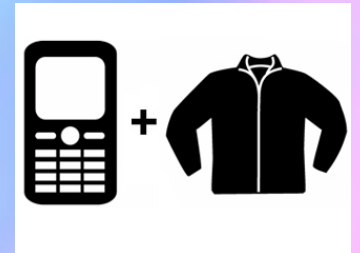
**Specialise in the Research & Development of  
wearable wireless sensor networks and  
microfluidic devices for fragrance delivery and  
therapeutic applications in *'emotional clothing'***

**'Smart Second Skin' : exploits olfaction in multi-  
sensory fabrics (active 'scentsory' properties)**

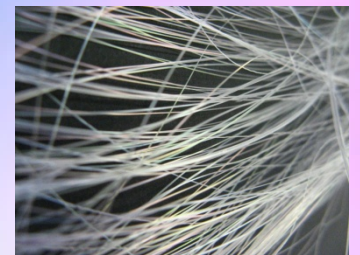
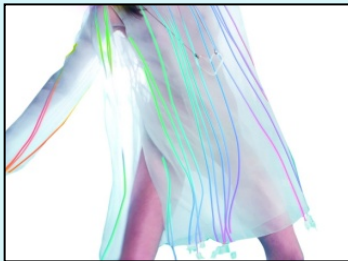
# Introducing eScent<sup>®</sup>

*Miniaturisation + Biology + Design = Wearable Technology*

[1] Functional 'Wellbeing' Scent  
Dispensing Jewellery



[2] Wearable/Mobile Technologies  
(consumer electronics/cell phones)



[3] Smarter materials interactive  
products



# SCENT COMMUNICATES A MESSAGE

- Ancient and primitive sense. 10,000 more sensitive than other senses
- Plumbed into **memory** via limbic system
  - access to feelings, likes/dislikes
- Increases wellbeing via changes in electrical brain activity
- Mood-enhancing effects of scent on brain influence
  - Performance, behaviour
  - Learning, mood. . .



## Hotline To The Brain



# The sense of smells known affective potential to regulate mood, physiological & psychological state

## Reduces:

Performance related stress \*

Startle reflex

Confusion

Insomnia

heart rate

Fear

## Balances

nervous system

## Stimulates

adrenal cortex

## Soothes

muscle stiffness

\*Christensen, Moscona et al., 'Process for effecting the relaxation of muscles by means of fragrance, 2002



# 'SMART SECOND SKIN': Strings Of Emotion

'Smart Sensory Fabric' vs. microencapsulated techniques

## Rivals Natures capillaries

- Inspired by '*neurobiological delivery mechanisms*'

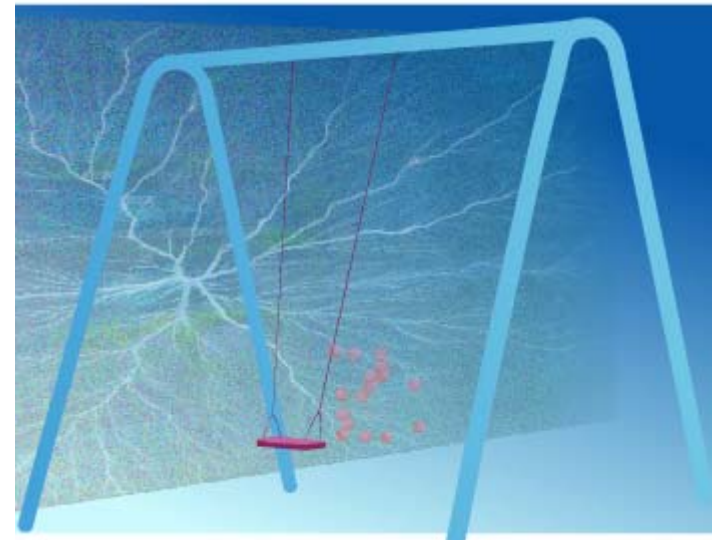
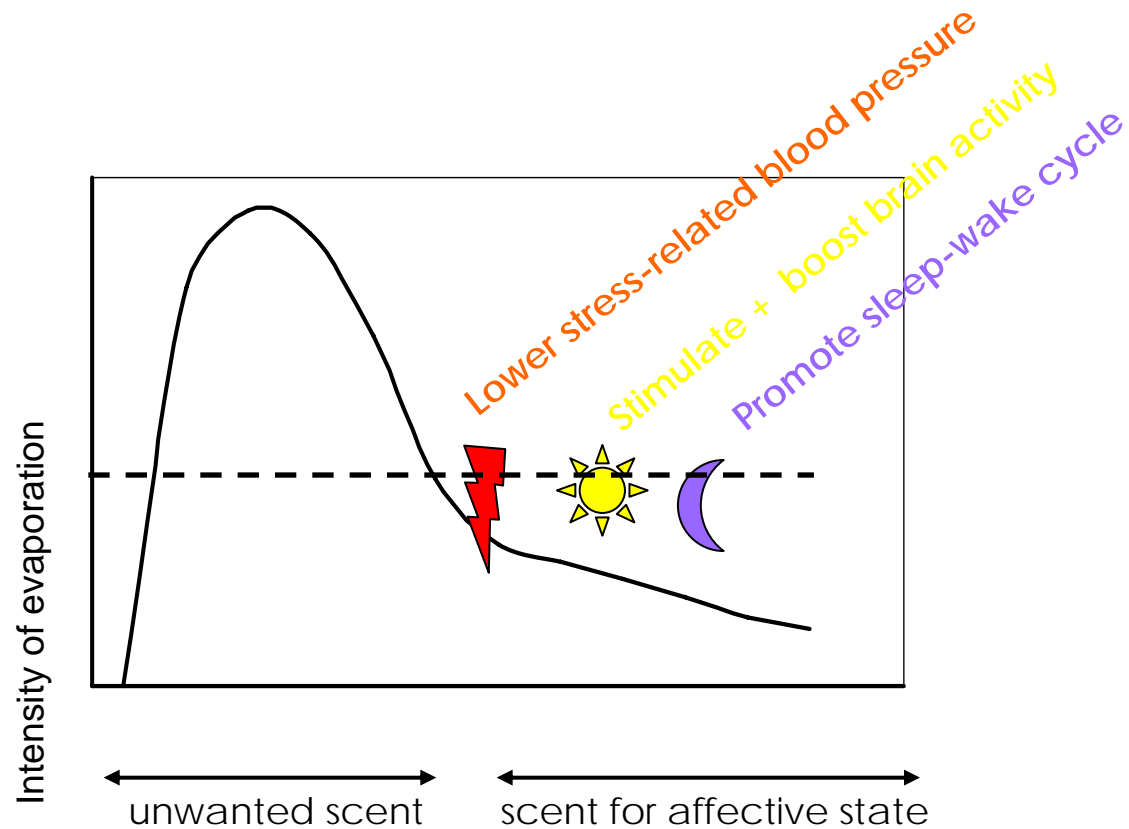
Mimics nature's **microfluidic processing system**; (veins, senses)

- forms an additional layer of **sensitive skin** that interacts with the wearer's emotions (joy, anger)
- controls the different *emotional states of the wearer*



Adeline Andre Haute Couture - Paris

# Mood Swings?



Jewellery to manage moods swings?

*Moods are important factor in determining well-being & behaviour*

*good – bad – lively – energetic – calm – peaceful – anxious – irritable – fearful – sad – tired – burnout – depressed*



# eScent ®

## Scent By A Wireless Web



PATENT 046382.8

*'Wearable system and method for dispensing fluid in response to a sensed property such as biometric data from an individual or various ambient sounds'.*

This Pervasive Day: The Potential And Perils Of Pervasive Computer

# live Scent : evil Stench

**live** – *to be alive / living*

**evil** – *wicked, associated with the devil*

**veil** – *conceals, disguises or obscures*

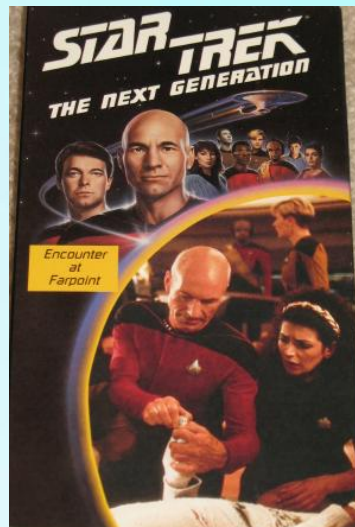
**vile** – *unpleasant, morally bad*

**So what if eScent® was misused??**



# HEALTH & WELLBEING

Affective state mood-enhancing scented clothing – inbuilt ‘sniffers’  
Influence behaviour



Star Trek The Next Generation 'Encounter At Farpoint' – military police

**Scents to suppress positive feelings, increase extreme mood swings,  
negative emotions, distort reality,**

# HEALTH & WELLBEING

Smell the colour of the rainbow!



Lavender

Rose

Lemon

Apple

Orange

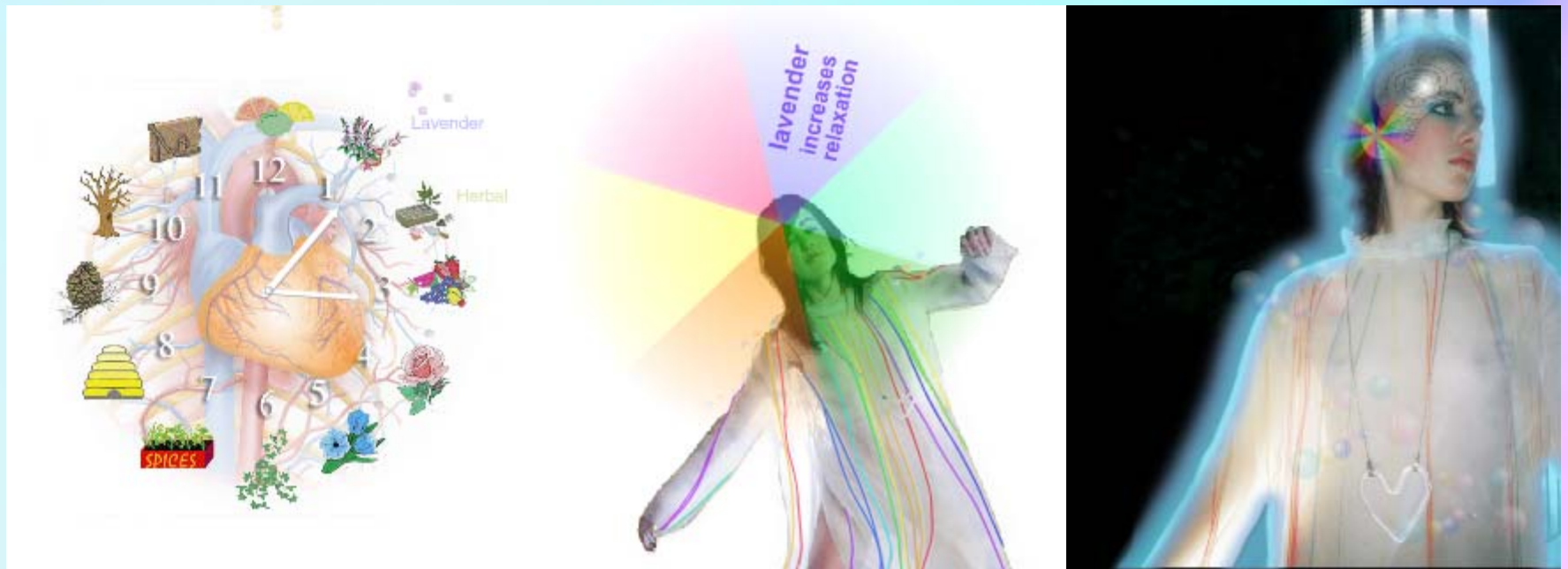
Augment positive emotional experiences, excitement, love, happiness, joy

Augment negative experiences, the smell of fear, sadness, guilt, anger, disappointment, bitterness, *implanted sensory hallucinations* Synaesthesia



# HEALTH & WELLBEING

**'Smell the time'** - creates a personal scent symphony that adjusts body clock - scents changing over time – improve sleep



**Imposes 'congenital anosmia' (similar to blind/deaf but inability to smell due to brain injury) - distorts scentsory perception, sleep deprivation**

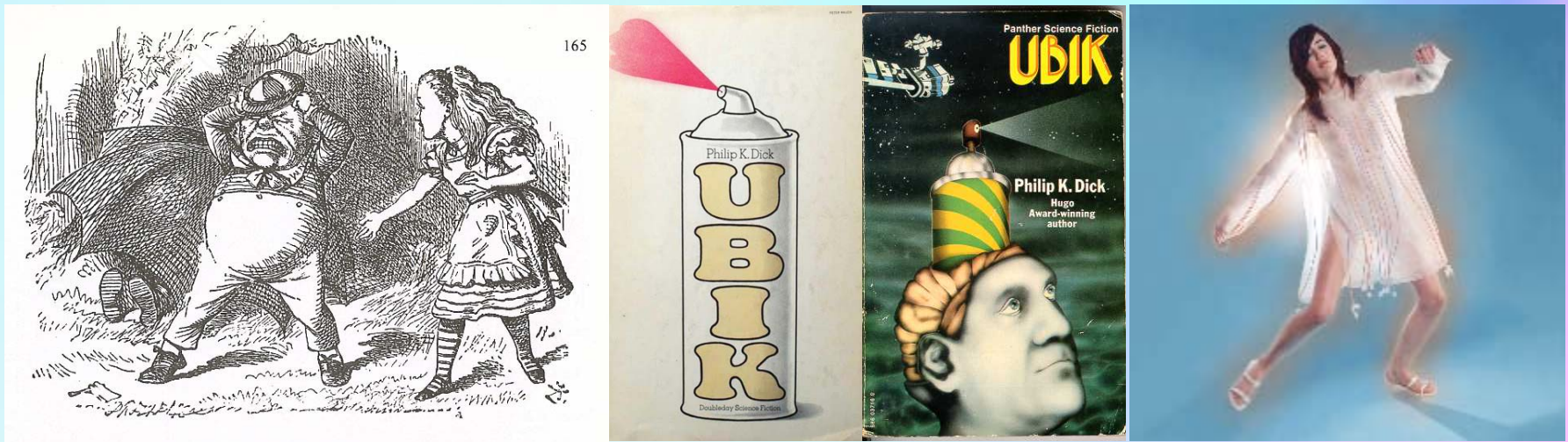
(1). Yagyu, T. 1994, Neurophysiological findings on the effects of fragrance: Lavender and Jasmine. *Integrative Psychiatry*, 10, 62-67

(2) Komori, T., Fujiwara, R. Tanida, M., Nomura, J., & Yokoyama, M. M. 1995, Effects of citrus fragrance on immune function and depressive states, *Neuroimmunomodulation*, 2, 174-180.

# HEALTH & WELLBEING

UBIK – Philip K. Dick 1969

UBIK '*scent bubble*' (veil) stabilise nightmare: reduce fear, anxiety, stress, boost self-esteem, confidence, maintain communication skills



UBIK nightmare '*reality in a can*', anti-wellbeing, increase fear and stress levels, reduce communication skills –

increase risk of mania and chronic depression (bipolar affective disorder)

# HEALTH & WELLBEING

Smart Hologram / Electronic nose sensors detect stress related body odour, early stages of lung and breast cancer, TB, diabetes "off" food



**Deliberately diagnoses the wrong illness / increase probability of asthma attack (scent allergy), increase side effects from drugs**



# LIFESTYLE

## Scentsory Nutrition



Scent to reduce obesity,  
minimise eating disorders

**Scent as an aid to  
increase appetite to  
encourage the obese to  
*get fatter and fatter***

Hirsch, A., 1995, Weight Reduction Through Inhalation of odours, J Neurol Orthop Med Surgery, 16:28-31

# LIFESTYLE

*. . . Smell the story . . . memory recall*

Ignite pictures with scent communication / branding. Increases odour training mechanism in elderly – reminiscence therapy, independent skills



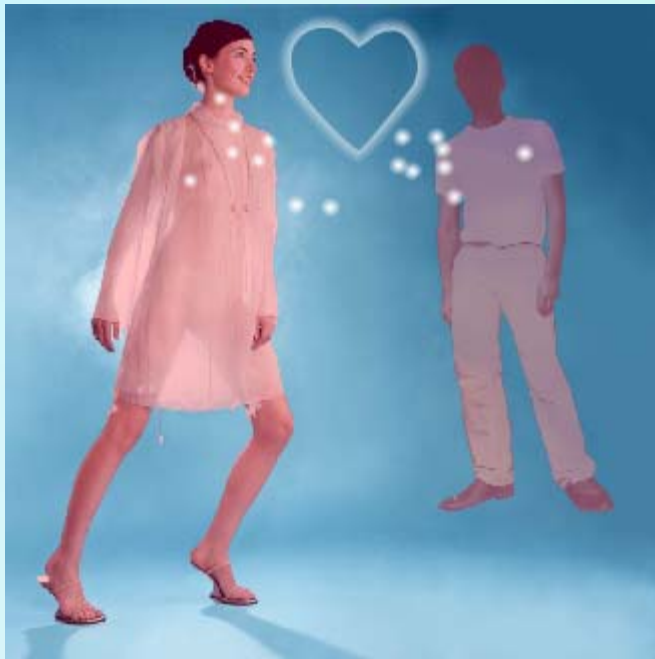
**Sensory overload / bombard elderly with negative, terrifying smells from past (entice stroke, heart attack = death)**

**Confuse our (pre-historic) ability to smell.**

# SEX

*social seductive magnets*

Pheromones for healthy sex life, freedom for intimate romance and privacy



**Pheromone overload: mass orgy, dating clothes attract wrong partner, promotes rape / violence, lack of trust. Arranged pheromonal matching**



# PROCREATION

Attraction: Pheromones for procreation



**Control population : synchronized menstruation (McKlintock Theory 1971)  
control ovulation 'pheromone fertility' mass female conception community**

# PROCREATION

Attraction: Pheromones for procreation



**Control population : synchronized menstruation (McKlintock Theory 1971)**

**Control ovulation: speed up or slow down hormones to pinpoint ovulation**

# TRUST

Pheromones to calm new born babies. New born baby smell calms mother promotes parent and child bond

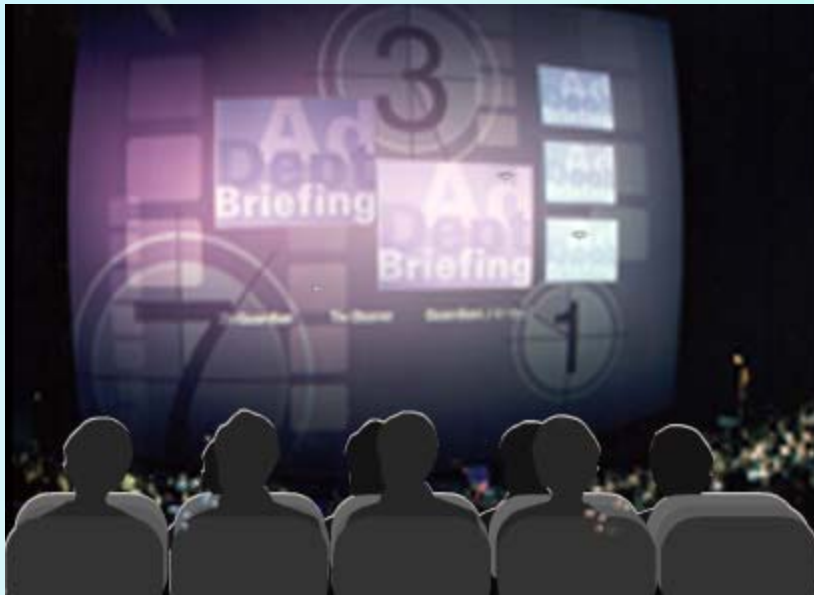


**Lactation 'mind games' for new mothers: clone maternal body odour and confuse new born babies (warped 'wet nurse')**



# LEISURE

Multi-sensory enhancement - clubs/TV concerts, scent experience



**Anti-(sc)entertainment promotes extreme fear / audience scaremongering**

# LEARNING

Improve maths & finance skills - sensory internet banking, enhance creativity



10/04	3.75	AAA	Aaa	100.4300	1.69	-0.02	-0.41	+0.38
02/06	6.88	BBB-	A3	105.2500	3.26	-0.01	-0.71	+0.83
04/06	6.10	A+	Aa3	105.5100	2.85	-0.02	-0.52	+0.33
06/09	6.86	AAA	Aa2	112.3800	4.14	-0.02	-0.47	+0.35
02/11	6.75	A	A2	109.9800	4.95	-0.04	-0.19	+1.32
03/26	7.18	A+	A1	107.8440	6.45	-0.01	-0.32	+1.25
01/31	6.50	BBB	A3	115.8500	7.16	-0.02	-0.42	+1.96
11/31	6.00	BBB	A3	101.9100	7.83	+0.12	-0.22	+2.63
	-0.01					-0.22	+0.48	
	-0.01					-0.26	+0.61	

Encourages overspending and mass gambling (scent in casinos Las Vegas)

# LEARNING

Scentsory Brainwaves: Improve consolidation of memory and learning (slow-wave sleep 'pulses')



Minimising affectivity in learning by 'brain-wash' during slow-wave sleep 'pulses'

Rasch, B., Büchel, C., Gais, S., Born, J., Odor Cues During Slow-Wave Sleep Prompt Declarative Memory Consolidation, **Science**, 9 March 2007: Vol. 315. no. 5817, pp. 1426-1429, March 2007



# SECURITY

Early warning danger signal for fire, leaking gas, mobile phone 'scent tones'



**Entice danger : loose total control of navigation: confusion 'scent implants' for enemy warfare – poison 'scent by a wireless web'**

# SECURITY

New data senses

Maintain personal identity '*olfactory signature*' – privacy issues

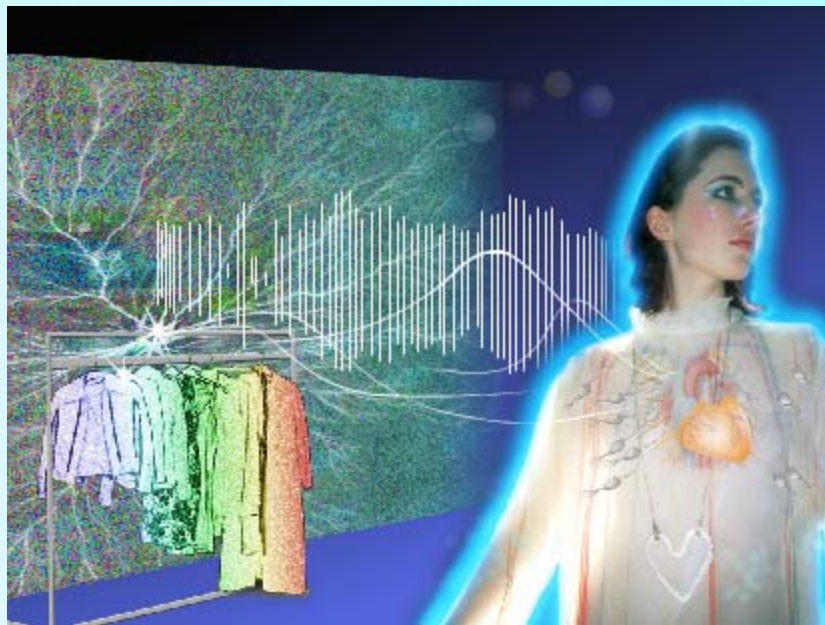


Loose control of 'odour signature' stored in 'Smellcode database'.  
Electronic nose (vs physical biometrics) passport control holds BO data

# PUBLIC SPACE

Stop making scents!

Wireless inhibitor reduces transportation of fragrance molecules overload in constricted environments (lifts, the tube etc) and 'perfume-free zone'



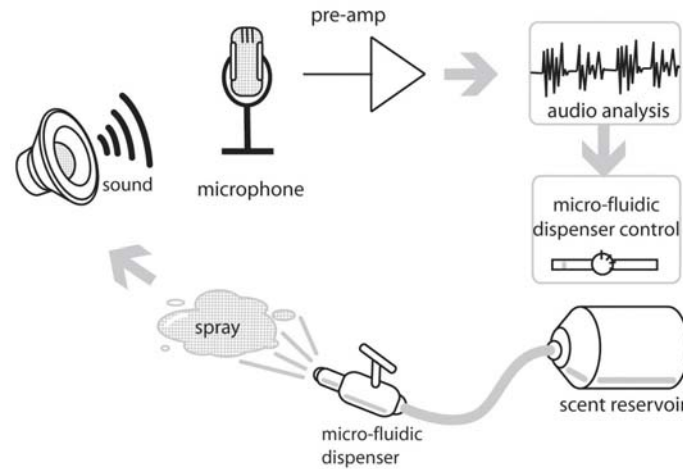
**Intense olfactory intrusion in public spaces – computer controlled stink bomb**



# PROTECTION

Stop Biting Me!

Insect repellent acoustic sensor clothing - Delivers anti-malarial chemicals

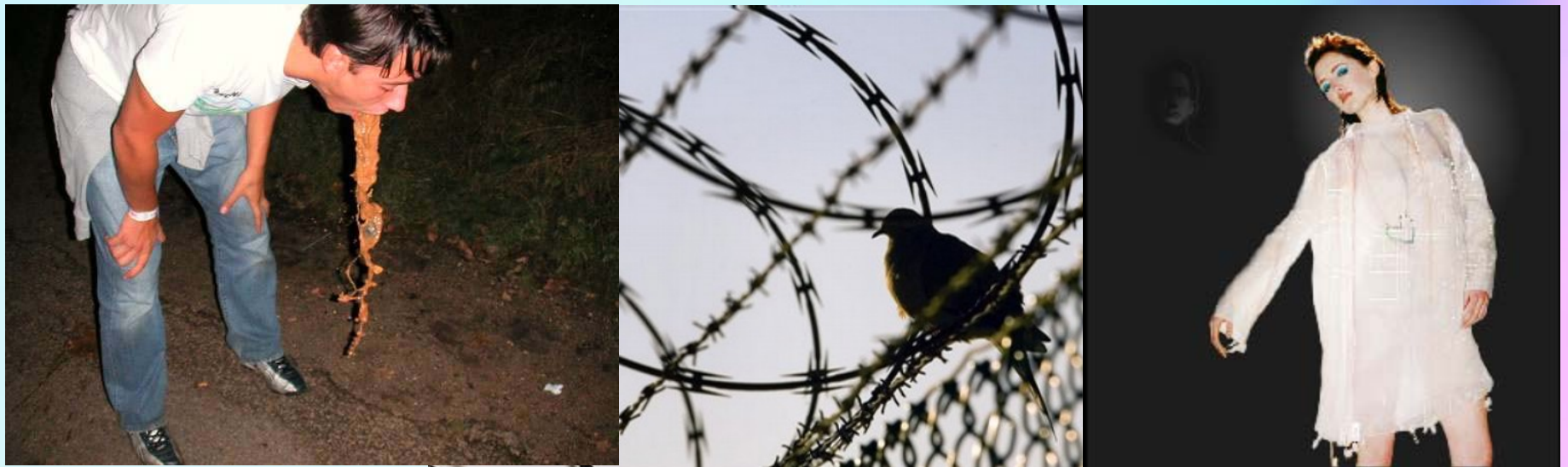


Enhanced body odour attracts swarms of insect bites & higher risk of malaria

# PROTECTION

## *The Wearable Stink Bomb*

Clothes to destabilise prisoners – induces violent vomiting ('*Stench soup*')  
Military application, Crowd control, stop muggers/rapists/burglars



**Malodour loss of control causes discomfort, violent vomiting, annoy people!**





Jenny Tillotson PhD RCA FRSA  
Sensory Design & Technology Ltd  
CEO, Creative Director, Founder  
Institute of Biotechnology  
Dept of Chemical Engineering & Biotechnology  
University of Cambridge  
Tennis Court Road  
Cambridge CB2 1QT

[jrt48@cam.ac.uk](mailto:jrt48@cam.ac.uk)

<http://uk.linkedin.com/in/escent>

