
Christian Nold

Bio Mapping is a concept + a tool

What would happen if we could make use of intimate biological data derived from our own bodies? Instead of handing over our DNA, finger prints or retina scans to an 'expert' for interpretation, we could gather, interpret and share this information with whoever we chose.

The tools that record these types of bio measurements are usually created for the medical or 'control' industries. In either case their intension is to fix the users identity and detect abnormalities.

The lie detector is perhaps the most familiar example of these biometric tools. The technology it uses is so simple and available that it exists as a tool for law enforcement as well as entertainment on daytime chat shows.

The lie detector requires a human operator who asks a mix of real and control questions, while monitoring the subject's breathing, blood pressure and skin sweat level in order to associate particular heightened states of arousal with a lie.

BioMapping
GPS II
PLUS

Bio Mapping = Lie Detector + GPS

The Bio Mapping tool uses a custom built Galvanic Skin Response (GSR) sensor which is based on the lie detector. The device records the changing levels of sweat on the skin as a measure of the user's physiological arousal.

Crucially though, the data is not passed to someone else, but recorded for later use by the wearer of the device.

The other half of the Bio Mapping device is a Global Positioning System (GPS) which records the user's location on earth without revealing their position to anyone else.

The two data sources are logged simultaneously and can later be uploaded into a custom built mapping software.


McDonald
Design
DESIGN
COPY

Bio Mapping Workshops

During a Bio Mapping workshop, participants are given a device, sent off on a walk and asked to return within the hour. On their return the data is downloaded and visualised as an 'emotion map' of the participant's journey.

Points along the route are shown as dots that vary in colour from bright red meaning high arousal to light green representing low arousal.

Physiological arousal is an indicator of a powerful mental state, which can be either stress or excitement. Both these emotions are represented by bright red dots. This ambiguity is multiplied by the vast range of mental and external stimuli that can cause this arousal.

In the context of a biometric control technology, like the lie detector, this ambiguity causes a problem for the operator who is trying to make a binary - truth, lie decision.

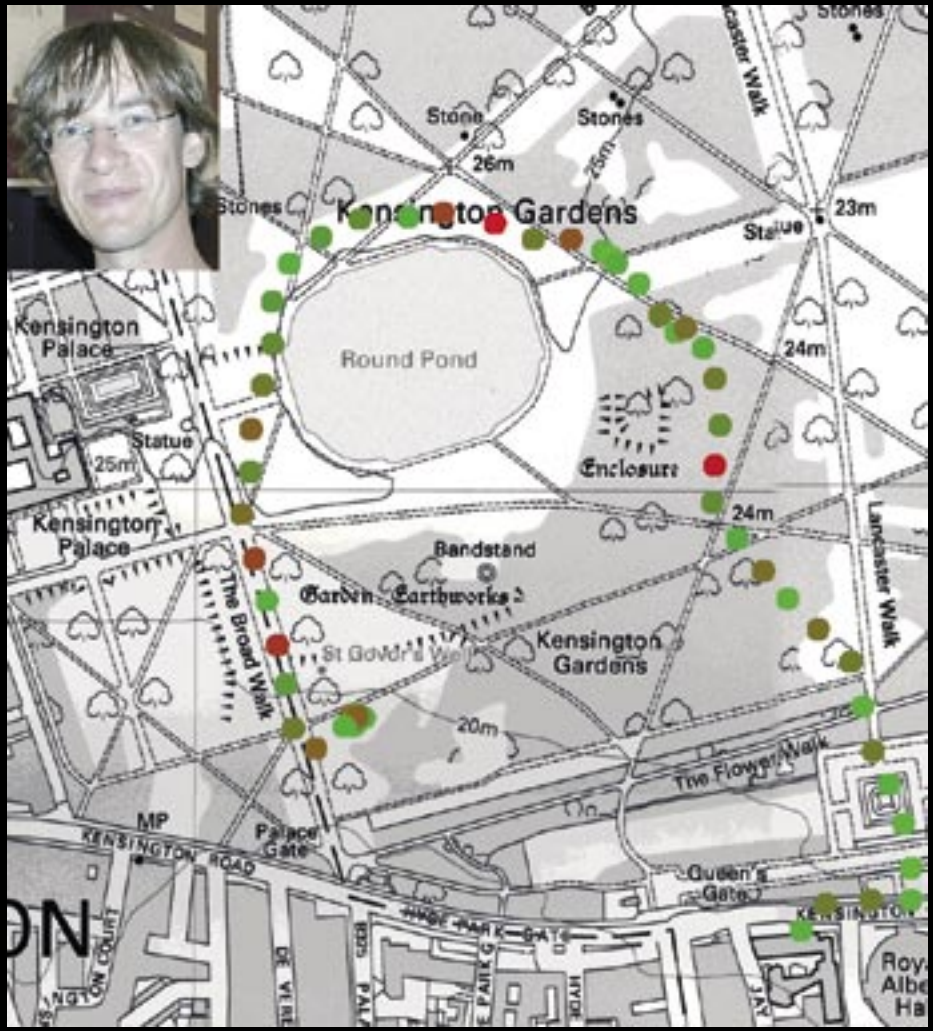
For Bio Mapping this ambiguity is the source of immense richness, since it requires the wearer's active interpretation. After returning from their walk and on seeing their own emotion map, the participants have a conversation with an assistant about their journey. If they

choose to do so they can leave a textual comment. Both the maps and the comments are then projected publicly.

People's walks and feedback varies strongly. Some people set out on their walk with a particular mission - retracing their daily journey to work, while other just want to explore the city or test the devices.

After seeing the comment this participant had left, I followed her route to where the red dots occured and found the tent in the middle of the town and took the photo on the right.


Ribena
Ribena



Reg (Kensington, London)
Well I wasn't that phased by being monitored by the device, but I was a little more concerned about the way people noticed that I was carrying it. Tourists looked at me oddly, imperial college techies asked me what is was, and I felt a strange affinity with the traffic wardens and park deckchair attendants carrying similar gear as I walked around.

The system got a lock in the park while I was having lunch, and then mapped my route around the pond which was not without incident. Halfway a woman walking two dogs tried to help one out of the water, and slipped and fell in. Several passers-by intervened. The exact spot of the drama was recorded bright red by the GSR device. A little further on I saw someone doing exercises who I thought that |I knew, but couldn't see their face. I paused and waited until they turned to face me, and though it wasn't them, I guess the suspense was strong enough to trigger a physical response. I would be really intriguing to see how my behaviour and my actions in such situations might alter if I had been aware of my own GSR state...but situations were unexpected and absorbing and I didn't register that I was wearing the device.
Got to run,

Christian (Helsinki, Finland)
I think at two separate points the device registered my elation on seeing the beautiful view of the sea. The shoreline is all incredible rocky cliffs with massive fortifications drilled straight into the natural rock.

Abi (Nottingham)
Drunken man outside Gallery seems to have made me quite stressed when I left the building. The other 'Stress dots' might relate to pigeons I saw on my route, which tried to attack me or obstruct my path.

Charlotte (Nottingham)
I was pretty chilled out for most of our route around Nottingham, even jumping in front of cars did not scare me! However after drinking the first McDonalds milkshake I've had in six months, I just don't know what came over me! The bright red dots seem to indicate that I was either very excited or very stressed or perhaps a combination of the two!

I'M LOVIN' IT!!

OToMO (Nottingham)
I thought I would try the device myself after assisting gallery visitors with it. It was wet and unlike a British summer I was used to, much like Alaska in 1986. I attempted a brief yet rewarding stroll around the Market Square (toilet end) and after spotting hoards of red t-shirt wearing 'Jesus Team' sales assistants I hastily returned to base. I never went left out of the building!

Take care.

Ellie (Nottingham)
It was really good to finally create my own Bio Map - I decided to take my sister with me who likes maps. We decided to attempt a treacherous, one-handed canal lock crossing, whilst the water was rushing beneath us. Fortunately we and the devices returned unscathed.

slinkybugger (Nottingham)
The Left Lion was accurate, as it is where I met my first girl friend. Disappointed it did not pick out the Old Angel Pub.

CLAIREW
MMMM ICE-CREAM
AARRRGGHH TURNSTILES!!

David
"Walk the DOG"

AnneHarrison (Nottingham)
I really enjoyed the Castle grounds with their superb flower arrangements. I got quite excited when I saw an advert for performance of the Canterbury Tales which is taking place tonight. I would have liked to have gone.

COLIN (Nottingham)
Stress caused by large group of tourists and having to have photo taken.

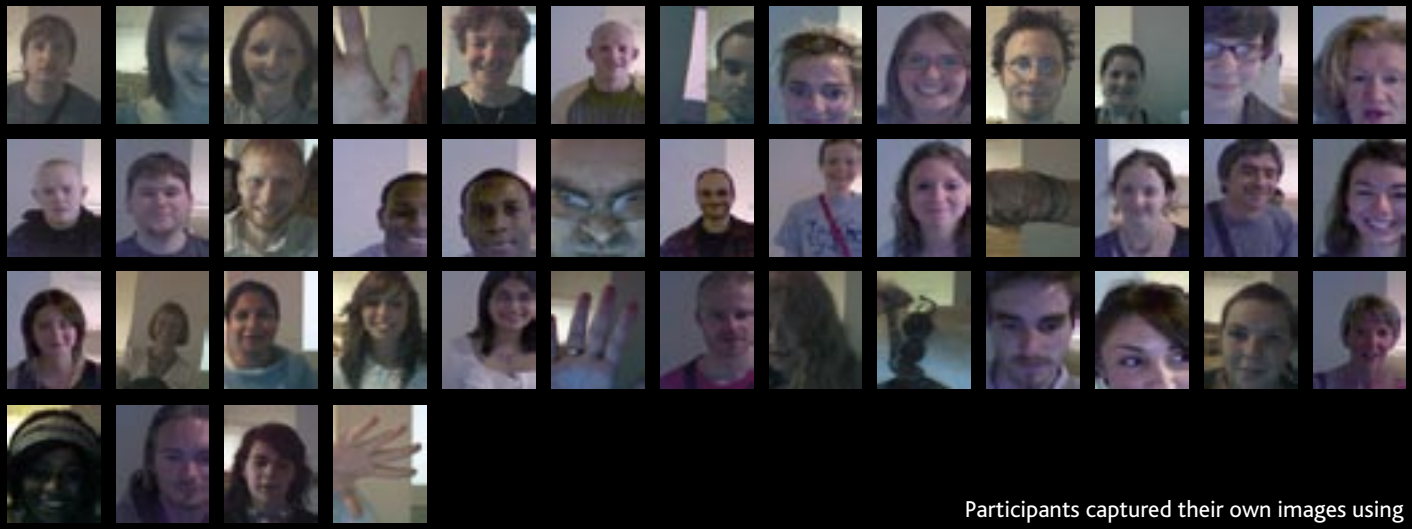
Christian (Nottingham)
Friday Night in Nottingham and everybody is in the streets. Loads of stag and hen parties are shouting at each other. 10 identical hens with pink cowboy hats and jackets are sitting in Pizza Hut.

shaza (Nottingham)
Shifty start...took a while to get going so was perhaps a little exasperating. Then my boyfriend made me walk up to Selectadisc record shop and wait outside for what seemed a life time and I was not impressed!!!!!! I felt fidgety and distressed by my boredom. Then we walked to Sneinton to a trainer shop (sports warehouse) but it was closed which made me VERY HAPPY because I didn't have to wait outside for my boyfriend. Then we made our way back to base where I was happy to be de-trackafied

Jason (Nottingham)
As I walked around the city I felt strange as everyone was staring at me, but I felt calm, not bad for someone who stopped smoking three days ago.

penny2 (Nottingham)
Stressful start coz my better half stayed inside taking to the gorgeous assistants and I had to fetch him! Typical. Found out what I did wrong yesterday - don't put the yellow device in the bag! Lots of stress crossing the roads - and excitement finding interesting graves - also a skip on the ropewalk!

Nottingham Communal Emotion Map



Participants captured their own images using a webcam mounted next to the mapping computer


HAMPDEN ST.
DUNDAS CL.
University
SHAKESPEARE STREET
Trent Univ.
Nottingham Trent Univ.
Guildhall
BURTON
TALBOT
WOLLATON
DERBY
Royal Cen.
UNION R.
York Bus Sta.
VICTORIA SHOPPING CENTRE
MILTON ST
Mkt.
GLASSHOUSE
Mosque
LAMARTINE
St Mary's Rest Garden
Victoria Park
BATH
Arnold & Carlton Coll.
HUNTINGDON
Victoria Leisure Cen.
ROBIN HOOD IND. EST.
STONEBRIDGE
PAXTON GDNS
RODEN ST.
ASHLEY ST.
HANDEL ST
BEACON
KING EDWARD ST
SOUTHWELL ROAD
STANHOPE ST.
Bus Depot
PENNYFOOT STREET
LOWER PARLIAMENT
National Ice Cen.
The Park
Tennis Courts
REGENT ST
OXFORD
TERRACE
VALLEY
Standard Ct.
Royal Standard Ct.
HUNTINGDON DRIVE
PEVERIL DR.
Castle Rock DR.
CASTLE
Radio Trent
BROAD MARSH SHOP. CEN.
Enfield Chambers
Lister Gate
Shire Hall
CLIFF
Harnett Ct.
PINDER ST.
B.B.C. East Midlands
CITY
Warehouse
Nottingham Sta.
Works
Crown Ct.
Offices
CANAL STREET
CANALSIDE
STATION STREET
BOULEVARD
Nottingham Archives
FISHPOND
CLIFTON TER
DRIVE HOPE DR.
HAMILTON DR.
KENILWORTH
NOTTINGH

Sense Making

By aggregating all the participants journeys, a surface layer can be created that becomes a 'Communal Emotion Map'.

A simple algorithm was used to detect when two coloured dots overlap at a particular location, in this case only the reddest dot is shown. This has the effect of highlighting an individual person's arousal at a place where lots of others may have felt quite calm. This was found to produce better results than simply averaging all the colours.

Perhaps we can start to read this Emotion Map of Nottingham by identifying zones of high arousal and considering their causes.

The labels on top of the map are my own and as such the view of an outsider who does not live in Nottingham.

The main arousal areas that I have identified, are the Art Gallery where the project was based, the central pedestrianised zone as well as the castle grounds. Many of the other red dots appear to be associated with traffic crossings.

At a basic level these collaborative maps allow us to see where people actually walk within a city, but more importantly they give us a glimpse of the social


Graves
University
Traffic
Traffic
Traffic
Art Gallery and
base for project
Central pedestrianised area
Traffic
Traffic
Pedestrianised area
Traffic
Traffic
Traffic
Traffic
Traffic
Castle Grounds
Traffic
Traffic
?
?
?
?
?
?
?
?
?
The Park
Tennis
Courts
Nottingham
Sta.
STATION
B.B.C. East
Midlands
CITY
NOTTINGH

Kensington Communal Emotion Map
Workshop with 42 participants

This map is centred on the Royal College of Art in London where I studied and developed the Bio Mapping project. Since I know this areas well, my analysis of the map is more detailed and specific.

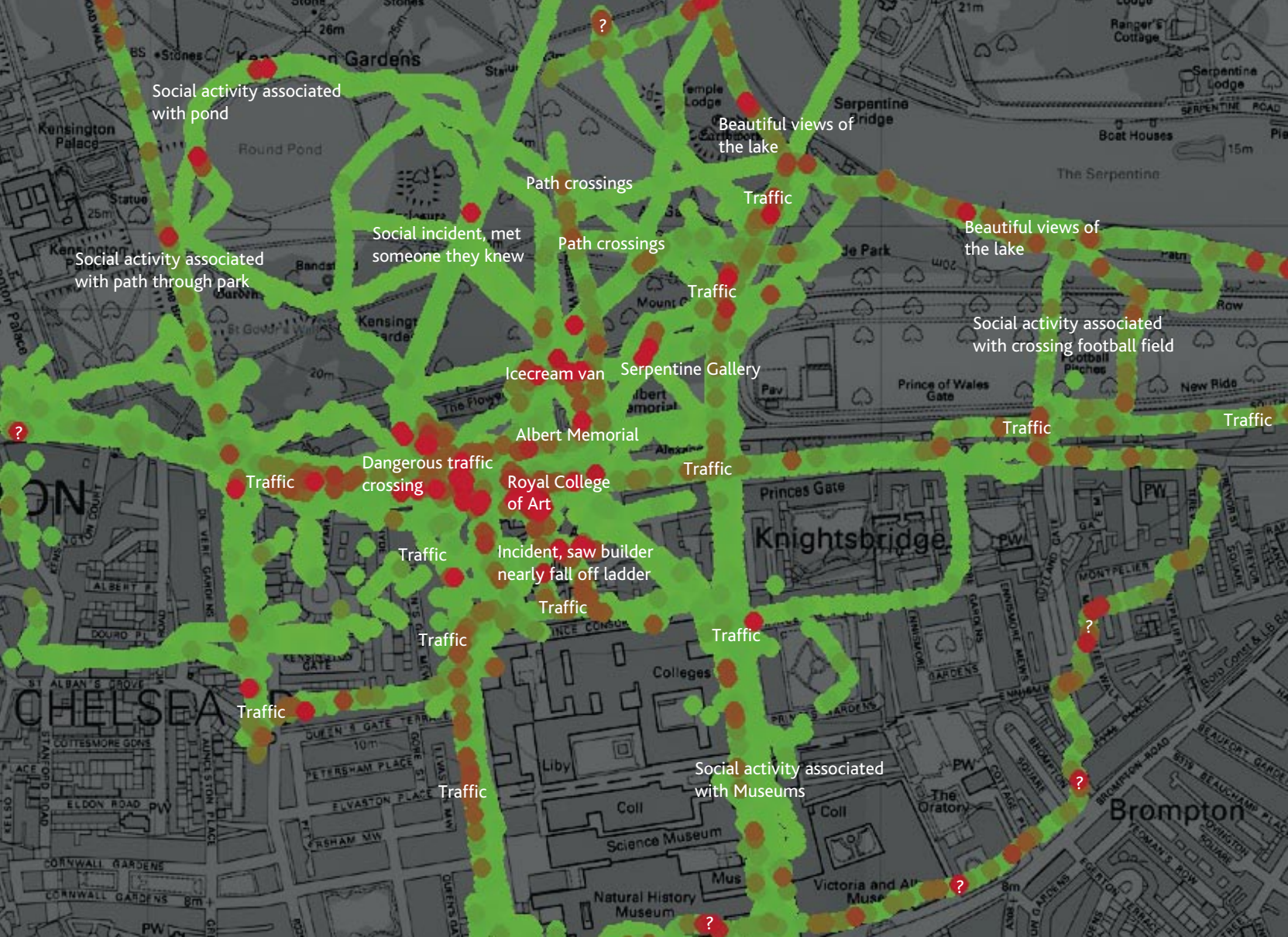
and emotional space we communally inhabit in the city.

These maps raise some difficult questions about the relationship between the built environment, our bodies and our social environment.

For example, is the high arousal in the pedestrianised area of Nottingham caused by the large concentration of shops or because it is the main social space where people meet to talk and flirt?

These issues of cause and effect are most powerfully explored by communities that have a stake in the area. Following this realisations I have shifted the focus of recent Bio Mapping workshops away from inner city areas towards places, where people live and can effect their environment.

A six month long Bio Mapping project is currentley taking place in Greenwich, London in conjunction with residents groups on exploring the potential of Bio Mapping as a tool for discussions on the radical regeneration that is taking place in that part of London.


Social activity associated with pond
Beautiful views of the lake
Path crossings
Traffic
Social incident, met someone they knew
Path crossings
Beautiful views of the lake
Social activity associated with path through park
Traffic
Social activity associated with crossing football field
Icecream van
Serpentine Gallery
Albert Memorial
Traffic
Traffic
Dangerous traffic crossing
Traffic
Royal College of Art
Traffic
Incident, saw builder nearly fall off ladder
Traffic
Traffic
Traffic
Traffic
Social activity associated with Museums
Traffic
Kensington Palace
Round Pond
Serpentine Gallery
Boat Houses
The Serpentine
Prince of Wales Gate
Princes Gate
Knightsbridge
Colleges
Science Museum
Natural History Museum
Victoria and Albert Museum
The Oratory
Brompton
CHELSEA

Bottom-up Statistics

The challenge is to create communal representations that don't eliminate difference

The biggest potential of this project is as a practical as well conceptual example of what I term bottom-up statistics.

Statistics are normally weapons wielded by those in power to present their own ideology as the democratic consensus. Opinion polls are used cynically to project an image of what the community supposedly thinks, watches and desires.

Can the process of collecting, sharing and interpreting data in a decentralised way reconfigure these types of power structures?

The data produced when people go for a Bio Mapping walk is both intimate and ambiguous and requires active user interpretation in order to make sense of it. Somebody else's coloured dots mean very little to us when compared to the wealth of meaning we can derive from a record of our own physiological arousal. Yet by consensually sharing this data we can create a resource of inter-subjective experiences that are open to powerful interpretations as well as challenges.
By being transparent about the technology and methods employed, so called 'facts' about an area or a community turn into open ended processes.

The fundamental hope is that this project offers an approach for appropriating the use and development of future biometric technologies which unless redirected, will only become more ubiquitous and invasive control techniques.