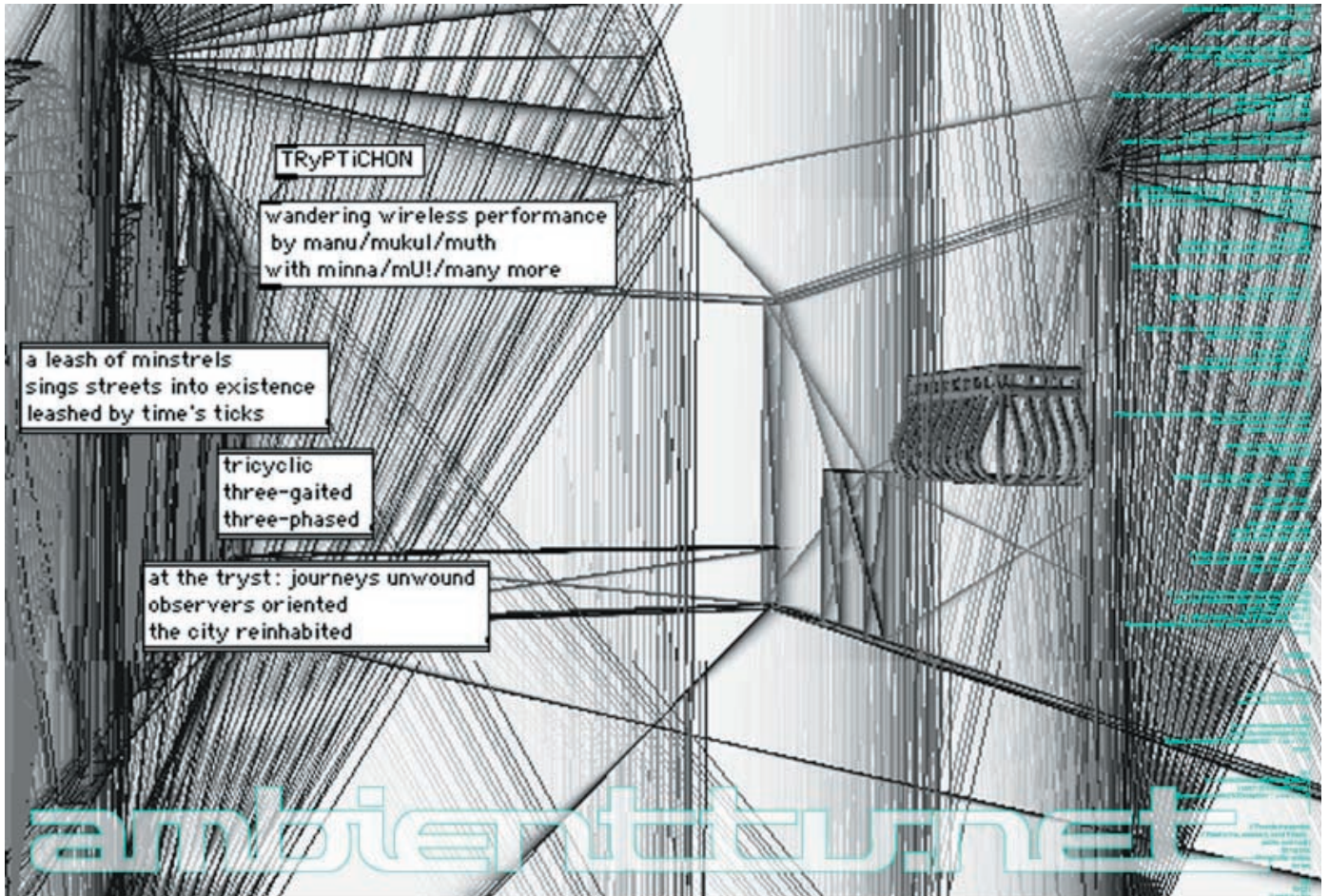


TRYPTICHON

www.ambientTV.NET/telejam/3/

wandering wireless performance
by manu/mukul/muth
with mU!/minna/malo & agent gav



a leash of minstrels
sings streets into existence
leashed by time's ticks

tricyclic
three-gaited
three-phased

at the tryst: journeys unwound
observers oriented
the city reinhabited

I. TELEJAM / TRyPTiCHON and FLIPFLOP

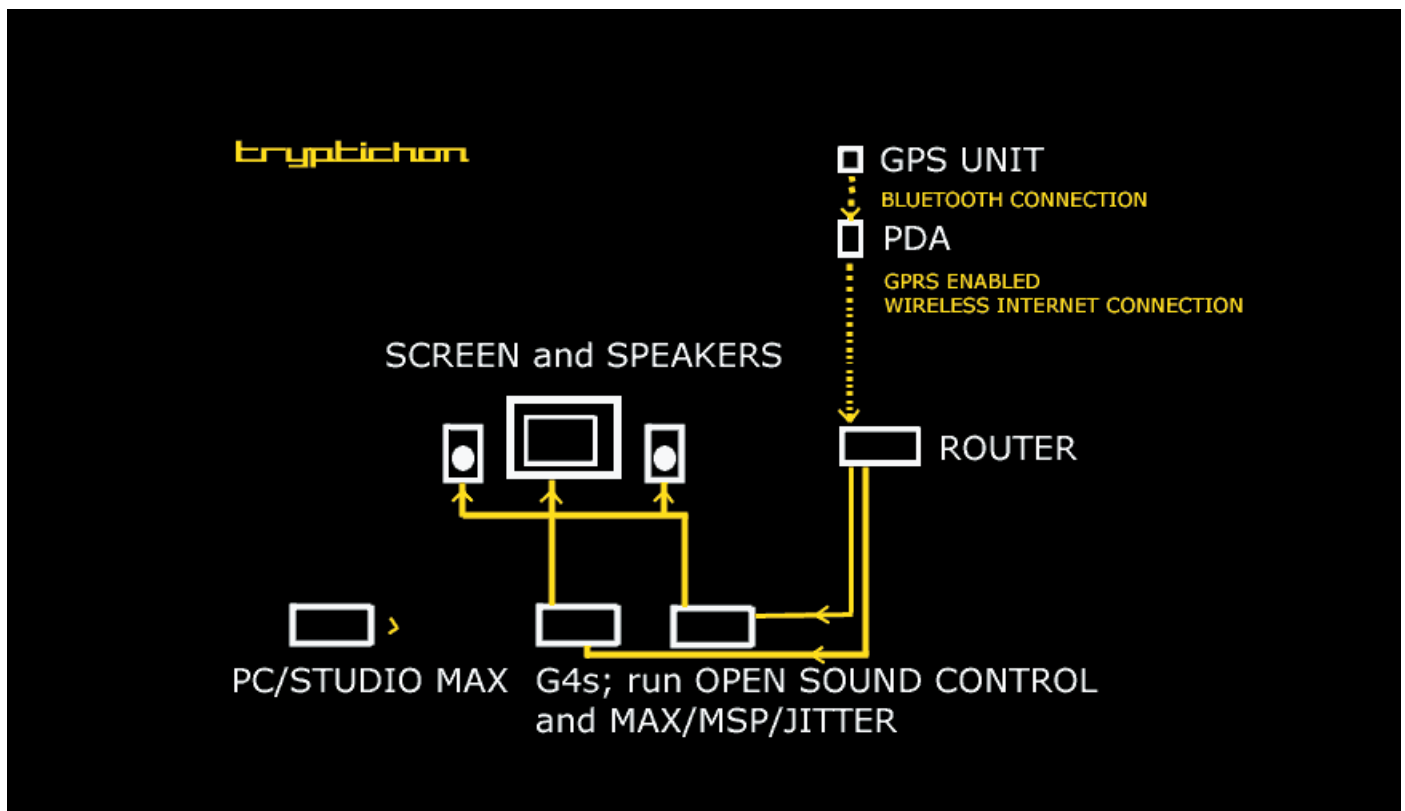
TRyPTiCHON is part of the TELEJAM series. TELEJAM is a forum where audiovisual artists explore the media-specific possibilities and limitations of streaming media within networks (the internet, WLAN, GPRS etc.) and its interaction with other media and physical spaces.

TRyPTiCHON combines audio-video transmissions from two mobile streaming units, with control data generated by the physical movements of the units relative to the base station as reported by GPS, to form a collaborative piece writ large over the neighbourhood.

Each audio/video stream is modified by being passed through a Max/MSP/Jitter patch. The control data for the streams is translated into Open Sound Control, a protocol that allows data for Max to be sent over a network. The processed streams are to be combined and presented (as audio+video).

As a piece of applied research, TRyPTiCHON is devised to accelerate the development of processes and hard+soft network structures for later use in the telematic theatre piece flipflop (<http://www.ambientTV.NET/3/flipflop>). For now, its best described as a jam. Salient relationships between the data sets will be chosen for incorporation into the live performance piece. We also explore narrative structure.

In November 2003, we set up and premiered TRyPTiCHON at the DMZ (London Media Arts Festival). Our setup consisted of two GPRS-enabled phone/PDAs (Palm Tungsten W), two Bluetooth GPS units, three G4 laptops, a stereo sound system and a monitor. This document describes the development of and feedback from this exercise.



You can read about our previous exercise for flipflop based on wearable PCs and wireless neighbourhood networks (802.11b) at:
www.ambientTV.NET/3/flipflop/inprogress/flipflop_report_nov2002.pdf
(700K .pdf file)



2. TRyPTiCHON at DMZ

DMZ Media Festival London at Limehouse, November 2003

For TRyPTiCHON, we envisaged two roaming performers (mU! and Agent Gav) equipped with two mobile units, and three indoor artists (manu/mukul/muth) managing the data and presenting the audio/visual performance, with contributions by 3D artist minna.

Roamers were to follow routes according to certain rules. We planned to allow the roamers to be directed by algorithms suggested by users at the Limehouse (eg., cross the city using only streets beginning with the letter 'C', having cycle lanes, having post boxes; or take the 1st bus that arrives for a journey of 1 stop, then the 2nd for 2 stops etc.)

During the jam, we were to test and explore a range of data interpretations:

3D and inside/outside relationships

- GPS fixes from the roamers are visualized as on-screen traces in a perspective projection.
- The location data are used to distort a 3D model of the interior space of the Limehouse (pre-produced by minna).

Two roamers: subjective mapping

•Moods and colours: the two roamers/flaneurs see the same street / neighbourhood / key spots through different eyes and code their different emotional interpretations by tagging the GPS data. The tags are then interpreted and used to modify the traces on screen. Possible modes of "being on the move" were suggested by the following writings:

mode_1: Walking by Thomas Bernhard

"Walking" records the conversations of the narrator and his friend Oehler while they walk, discussing anything that comes to mind but always circling back to their mutual friend Karrer, who has gone irrevocably mad. Walking provides a penetrating meditation on thinking and on the impossibility of truly thinking.

mode_2: On The Road — Jack Kerouac

"The point of Beat is that you get beat down to a certain nakedness where you actually are able to see the world in a visionary way," wrote Ginsberg, "which is the old classical understanding of what happens in the dark night of the soul."

mode_3: Hänsel and Gretel — Grimm Brothers

The classic fairy tale about two kids, who dropped breadcrumbs on the way into the woods to mark their way back, but when birds eat their traces, they become lost and are abducted by a witch.

mode_4: Walden — Henry David Thoreau

"I wish to speak a word for Nature, for absolute freedom and wildness, as contrasted with a freedom and culture merely civil — to regard man as an inhabitant, or a part and parcel of Nature, rather than a member of society."

"I have met with but one or two persons in the course of my life who understood the art of Walking, that is, of taking walks — who had a genius, so to speak, for SAUNTERING."

Other possible literary bases for modes:

Homer's *Odyssey*, Georges Perec's "Species of Spaces" and other Oulipo-an works

Sound/space

- Using the street as a stave for music composition: position relative to Limehouse as given by GPS is used to control pitch/velocity etc. parameters of a synthesizer.
- The roamers' wanderings move audio streams (from their phones) around a surround-sound setup at Limehouse.
- Samples of the roamers' voice calls are attached visibly to their on-screen traces. On their return, the roamers uses these audio objects to remix their journeys.

3. The TRyPTiCHON Server

TRyPTiCHON uses a custom programmed server which receives TCP messages from the GPS-enabled handheld device via GPRS and translates them into the OSC (Open Sound Control) protocol, a protocol that can be understood by applications such as MAX/MSP/Jitter and Supercollider.

For this process to work the server has to run on a computer with a static IP address, as the GPRS TCP messages are being sent from the handheld device to the network provider (in this case, Orange). The provider then forwards messages to the TRyPTiCHON server.

Obtaining a static IP address while using a shared ADSL line is made possible using port forwarding. The router at the performance space has to be modified to forward requests made at a specific port to TRyPTiCHON's own server.

This custom server takes the incoming messages, translates them via the OSC Java library into Open Sound Control packages, and transmits these via UDP over the Local Area Network (LAN). Any computer on the LAN that is targeted by the server will receive the OSC messages and then be able to use them as control data in, for example, Max patches.

The TRyPTiCHON server translates the following data from the GPS units into OSC:

- UserID – to distinguish the roamers
- PerformanceMode – The roamer has the choice of different modes, which have effect in later Jitter patch implementations
- Longitude & Latitude The position of the performer
- Speed – Speed of the performer
- Course over Ground - A degree value specifying the bearing that the performer is moving on

(The last three items of data are parsed out of standard GPS sentences sent by the GPS unit via the handheld PDA to the server).

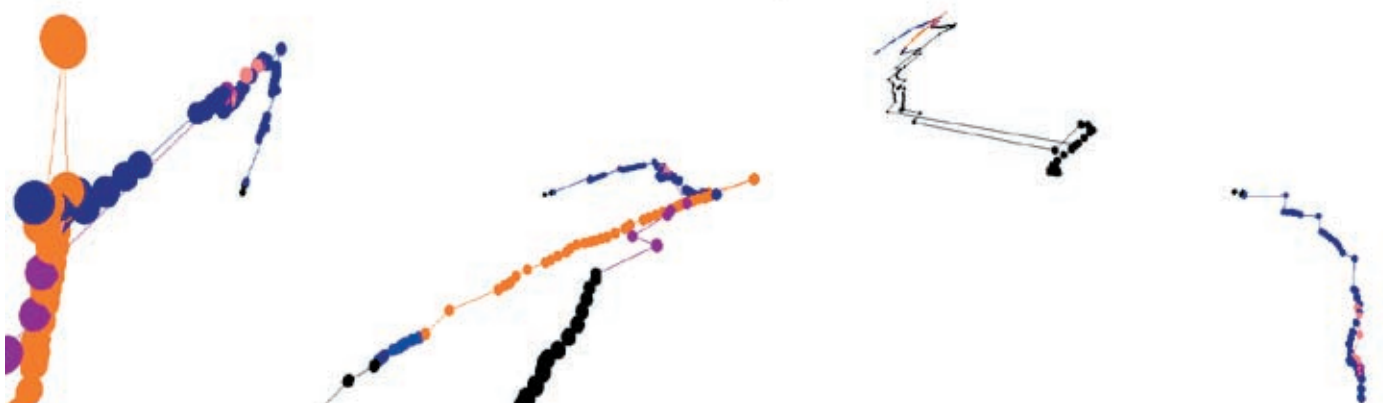
The Java code of the TRyPTiCHON server as well as the underlying Java OSC Library for constructing the OSC packages is open source and will be distributed by ambientTV.NET (server code) and Soda Creative Ltd (OSC Lib). Please contact us if this is of interest to you and we will provide the source code and documentation.

4. Emotional Mapping

Given teething problems with our technology (particularly Bluetooth, which proved unpredictable when there were more than two devices in proximity), issues relating to importing 3D meshes into Jitter, and the (audio-visually) noisy bazaar-like context of DMZ, we revised our expectations of the trials and limited ourselves to mood- (ie. colour-) coding the roamers' traces in a perspective projection relative to Limehouse.

One roamer at a time left the building by bicycle with the PDA and GPS. The route was drawn live on the screen using OpenGL commands in Jitter to connect the discrete position fixes that were received in 30 second intervals.

The TRyPTiCHON application on the PDA allowed the roamers to chose between 4 modes or tags that could potentially affect the translation and interpretation of the location data, in terms of line width, colour, etc. However, during DMZ we did not make use of the modes; instead, the roamer called in to mark a specific location, or to change the colour of the trace. The call-in was triggered by environmental changes that affected the roamer's mood. The route taken by the roamer was chosen on a more-or-less ad-hoc basis (see the report from Agent Gav).



5. ROAMER Agent Gav

pix available at www.dgen.net/gallerys/dmz_gallery/

I started by cycling to Canary Wharf.

My first report described the Legoland sterility of the place, it was like a ghost town. I found this neat little street (right) where there are some older houses overshadowed by the new developments, a stark contrast to the "New Providence" buildings directly behind them.



At "New Providence Wharf Development" (left), I stopped and took a photo of the new building. Within five minutes a security guard came out and asked why I was taking photos, and told me that they do not allow photos to be taken. I asked why and he did not have a good reason, "they just don't allow it", so I replied that since I was on a public highway, he had no jurisdiction over me. I happened to be on the phone to Mux and was relaying some of the conversation to him, and holding the Tryptichon /GPS device as if it were a measuring device, all of which contributed to making him feel nervous, and eventually he left.

I then deliberately went up to all the CCTV cameras (right) I could see and took a photos from directly underneath. Within about a minute, the manager was out asking what I was doing. I continued to use the TRYPTICHON/GPS device as if it were a measuring device, which really unnerved him as he kept trying to see what was on the screen. I explained that I didn't understand why I could not take photos. He said that they did not want the tabloids taking photos, but that if I wasn't taking commercial



pix, then it was ok. I confirmed to him that they were "non-commercial" and he went away (Gavin O'Malley, Estate Manager, New Providence Wharf Development, 1 Fairmont Avenue. London E14 9PA). There was also a radar unit right outside the building (left).



I proceeded south east toward Greenwich, reporting on the significant contrast in architecture, but similar desolation

in terms of people. Travelling through the Greenwich tunnel (right) I was able to confirm that it is a completely radio-quiet zone as far as mobile transmission is concerned – signal was lost very rapidly in the lift as it descended and I later reported that the location would be of use should anonymity be required (though you would be seen entering and leaving!). It was amazing how much more life there was in Greenwich: bustling, happy people. I did a loop around Deckspace (below left) and then headed back via the South side of the river, stopping to take a rather wishful-thinking photo on the way (below



right). Later, there was a chance encounter with a beautiful sailing ship passing in front of Canary Wharf – and further along, I was held up at Tower Bridge as it opened to let the ship through.



It took far longer to traverse the South side of the river because of the newly developed “expensive” housing. Whereas

I’d previously had an uninterrupted journey along the river bank, now I would be coasting along only to find that the path suddenly stopped and I had to double back on myself to find an alternate route. This became very annoying and happened about 8 times – exclusive property developments barring any transit along the riverfront.



I arrived back at DMZ around 6pm, having cycled for about 4 hours. Est. distance travelled: 30–40 miles including all the looping around. The technology was extremely unreliable and I had to restart the communication between GPS device and the PDA about 20 times. On three occasions the phone completely froze and had to be hard-reset.

7. Evaluation of mobile phone Motorola A920 “A brick in a walled garden”.

First choice for platform: A 3G phone with built-in AGPS, the Motorola A920. We were looking for a consumer device which would allow us to send voice and location data to a server. The Motorola A920 phone which operates in the UK on the “3” network seemed to fulfil the requirements at a reasonable price. It runs Symbian OS (an operating system that allows Java applications to be implemented), is GPS- (global positioning system) and GPRS- (general packet radio service) enabled, includes video messaging, and in combination with a one year contract costs a reasonable £130.



There was also an amusing coincidence: our deadline for the DMZ festival and the deadline for a coding competition from "3" for developing A920 software for the A920 shared the same date, November 14th 2003.

Soon after the hardware arrived and we had become familiar with the details of the A920's development environment, we encountered the first problems. Apart from the appalling battery life (a couple of hours at best), the first major issue was with signing (a process that certifies an application as OK to be installed on a particular piece of hardware) particular to the A920 handset. Applications have to be approved by "3" first to enable installation. "3" claims that this decision has been made to prevent malicious software, which might make use of an extended java library, to be distributed by 3rd party providers. The other side of the coin is, of course, that "3" would be the only source of software. This signing issue prevented us from any reasonable user testing of the phones GPS functionality.

The signing issue also found its way into Hutchinson's developer competition: applications have to be signed for installation even on the A920 emulator (using an emulator-specific key available to the public), adding another layer of complication for testing software. When contacting the developer support for the competition, we didn't receive too much help regarding our dilemma, as this email from Hutchinson tech support illustrates:

"There's been much publicity on the fact that only 3 can sign the applications for the commercial units. This is the reason that the competition will be judged on the SDK. The handsets for the top 20 applications entered and judged on the handset will receive a unit that enables the developer to load any application onto the handset. I am currently developing an online signing process to enable you to do this on commercial handsets. The reason for having this security implementation on the handset is that there is no granular security model on OS7 or able to be implemented by Motorola. This creates a risk in that the sensitive API's such as Phone API and Location API have legal implications. For example the phone API could be used to automatically phone premium rate number.

I am trying to find a solution to this as it restricts development. We're close but it's untested currently. I'll try to get some work around for this week. Sorry I can't do more than this."

After a certain time period of waiting for the promised solution, we luckily came across a small community of A920 users who had developed a way of manipulating the PC-syncing software that came with the handset so that it could access the entire directory of the phone. This basically enabled us to install our home-cooked applications onto the phone despite the "security policy".

Just as soon as installation of new software on the handset itself was made possible, another flaw of the A920 became apparent: its AGPS (assisted GPS) has a much slower update frequency than GPS, with new location data being available only about every 5 minutes. This update frequency clearly was too slow for our needs. So after a period of repeated tweaking, testing and giggling we decided to seek out other hardware solutions (overleaf).

The discovery of an online petition to Hutchinson 3G reassured us that we were not alone in having misplaced faith in the capabilities of A920:
(www.petitiononline.com/a920/petition.html)

A call to Hutchinson 3G to open up the Motorola A920, and break down the “walled garden”.

We, the undersigned, petition Hutchinson 3G, with respect to the limited functionality, and plain dis-functionality of the Motorola A920.

Most if not all of the undersigned have bought this phone in the firm belief that it was an advanced mobile phone with Internet, PDA, AGPS, bluetooth and open email functionality. Certainly the phone has been advertised on-line by numerous sites that it will have all the above functionality, only to slowly discover after it was purchased that it had none of these abilities (...)

A conducted survey of Motorola A920 owners particularly speak out, and strongly agree that they would like to see the A920 have:

- 1.) Full Internet access.
- 2.) 3rd Party applications to work.
- 3.) Bluetooth functionality.
- 4.) Own email address capability.

We request that Hutchinson 3G take this petition into consideration, listen to i's client base, and open the phone up.

We eventually ran TRyPTiCHON with the Palm Tungsten W with added Bluetooth SD card to couple it to a Rikaline Bluetooth GPS unit. This equipment combination has disadvantages: it is quite expensive, voice and GPRS cannot function simultaneously, Bluetooth is unreliable, and the mobile unit consist of two separate boxes; however, it works (!), and the Palm's battery life is excellent (several days as opposed to the A920's few hours). A better solution would involve a smaller, more integrated solution (Treo 600 + SD GPS card is one possibility).



7. Future development

TRyPTiCHON will be performed next at the pixelACHE festival at Kiasma in Helsinki, April 1-4, 2004, following a development residency at NIFCA, Helsinki.

Clearly we had more ideas than we could test during our setup at DMZ. The next key steps will be:

- making more trial runs to gather experience on the kind of fruitful interactions that could occur between roamers and neighbourhood
- solving problems of integration into Jitter of 3D meshes from other applications
- improving reliability of the technology
- scriptwriting.

FOR MORE INFO CONTACT: info@ambientTV.NET