A Manual for The Dark Interpreter V0.4

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Dark Interpretation

The truth I heard often in sleep from the lips of the Dark Interpreter. Who is he? He is a shadow, reader, but a shadow with whom you must suffer me to make you acquainted.

The Dark Interpreter is influenced and guided by body capacitance, skin resistance, biological micro-voltages and the fleshy conduction of all signals. These are ways of saying that the Dark Interpreter is completely open. It is not to be considered as a closed and bounded device which is subject to an exterior control "by the body." The Dark Interpreter is an electronic and thus earthy shadow of the body, it is (inside) the body.

The Dark Interpreter is thus not to be controlled. It is an obsidian electronic mirror, the earth and skin itself. The preliminary working of The Dark Interpreter (reflecting the state of the improviser) should be considered as part of the creation of a unique, skin-sensitive instrument. The border between this first stage and the improvisation and playing of the instrument is diffuse, the mirror surface is ill-defined. The Dark Interpreter leads a path for skin, fingers, earth and head.

The Dark Interpreter attempts to provide answers to a posed situation. Each situation and response are divided and mirrored as to code and audio. The operation of The Dark Interpreter bridges these domains, entering into a simulated code world of plagued villagers and process.

To define the uses and potential paths of The Dark Interpreter we refer to the five knobs/potentiometers and the finger-board, the gold set of contacts which in the case of Tenebrarum is seperate from the two pronged fangs (for head and earth use).

Two provisos

The Dark Interpreter does crash infrequently, often in interesting responses. Simpy reboot with a quick switch on/off.

The Dark Interpreter can take over control of incoming samples and audio generation; attempt to regain control if desired.

The three interpreters, how they differ and can be interrogated

Mater Lachrymarum

No analogue processing hardware so all settings which relate to hardware are redundant. The fifth knob, which in other synths is tied to hardware routing and settings, is now repurposed as the limit fo sample playback (so length of sample playback). Finger/skin controls are as on the Mater Suspiriorum.

Mater Lachrymarum is best suited for harsher, granular re-processing of incoming signals and bit-noise generation with a greater control of key sample

playback.

Mater Suspiriorum and Mater Tenebrarum

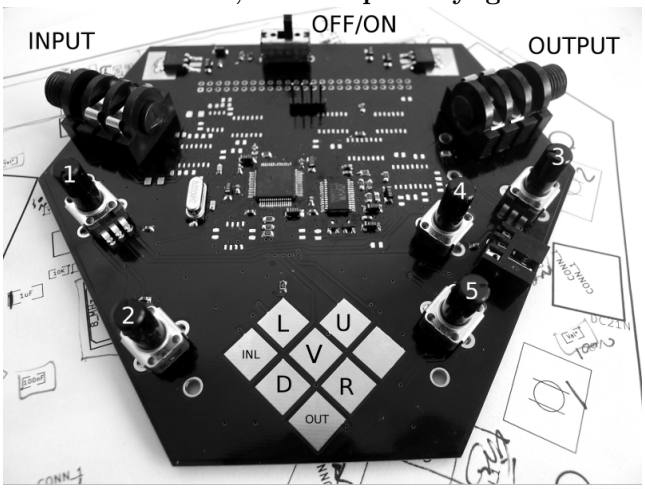
These both share the same analogue processing hardware. Mater Tenebrarum adds a new head, earth, skin and finger board which breaks out for the flesh world most of the important digital and analogue signal paths and settings, allowing for the unhanging of settings from digital dependence and re-placement of software on the skin.

The Tenebrarum also adds the crude EEG/micro-voltage fanged amplifier for head and earth. All knob controls are the same for both synths, although the layout is different. Finger controls are also arranged differently.

Mater Suspiriorum is recommended for harsher analogue noise generation and processing with less dialogue with that dreadful organ than in the case of Tenebrarum. Mater Tenebrarum presents the ultimate instrument for skin/life coding, intended to be played fully by skin and head.

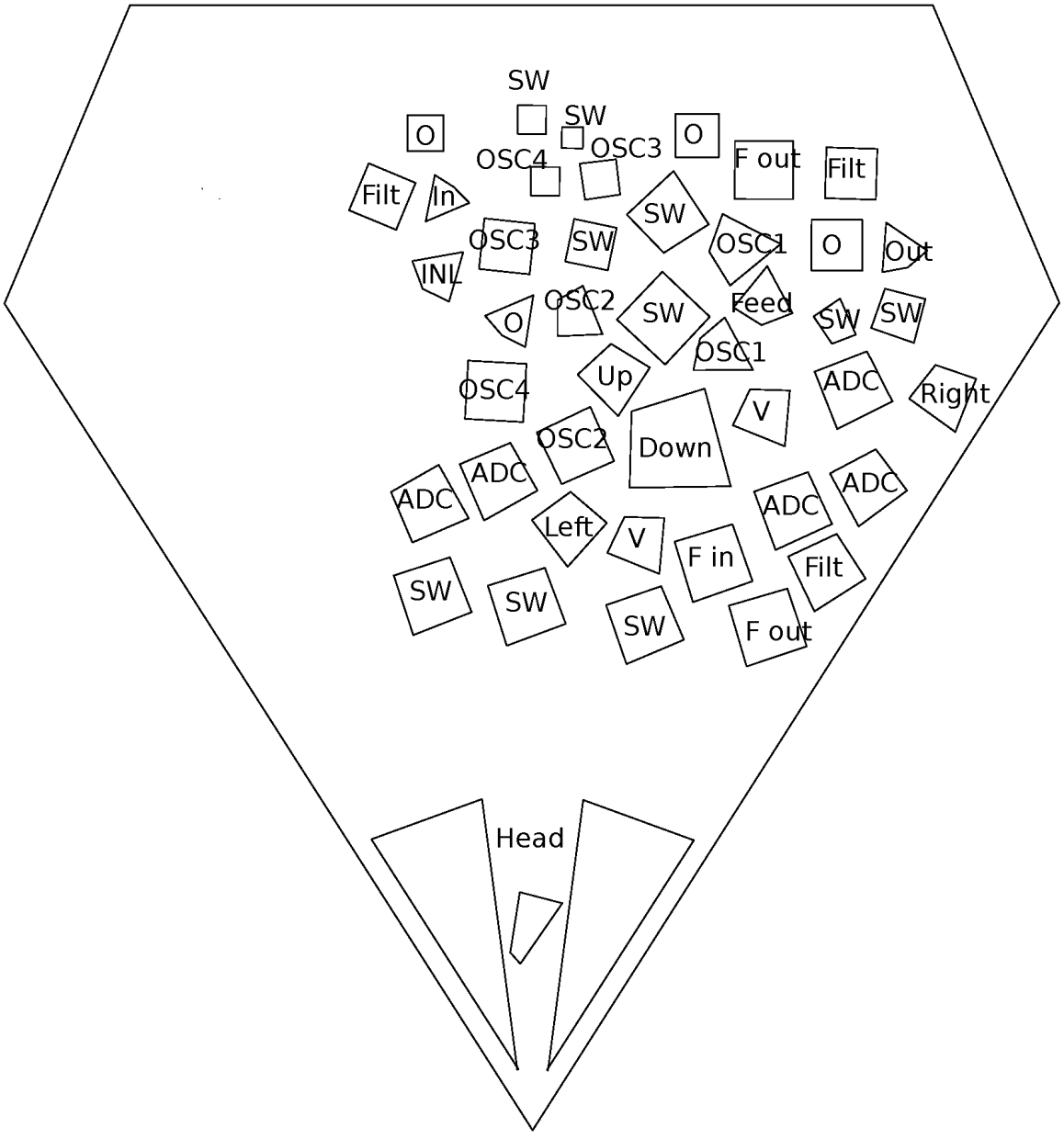
Laying out the Interpreters

The Dark Interpeter will not always be found sitting inside my dreams, but at times outside, and in open daylight.



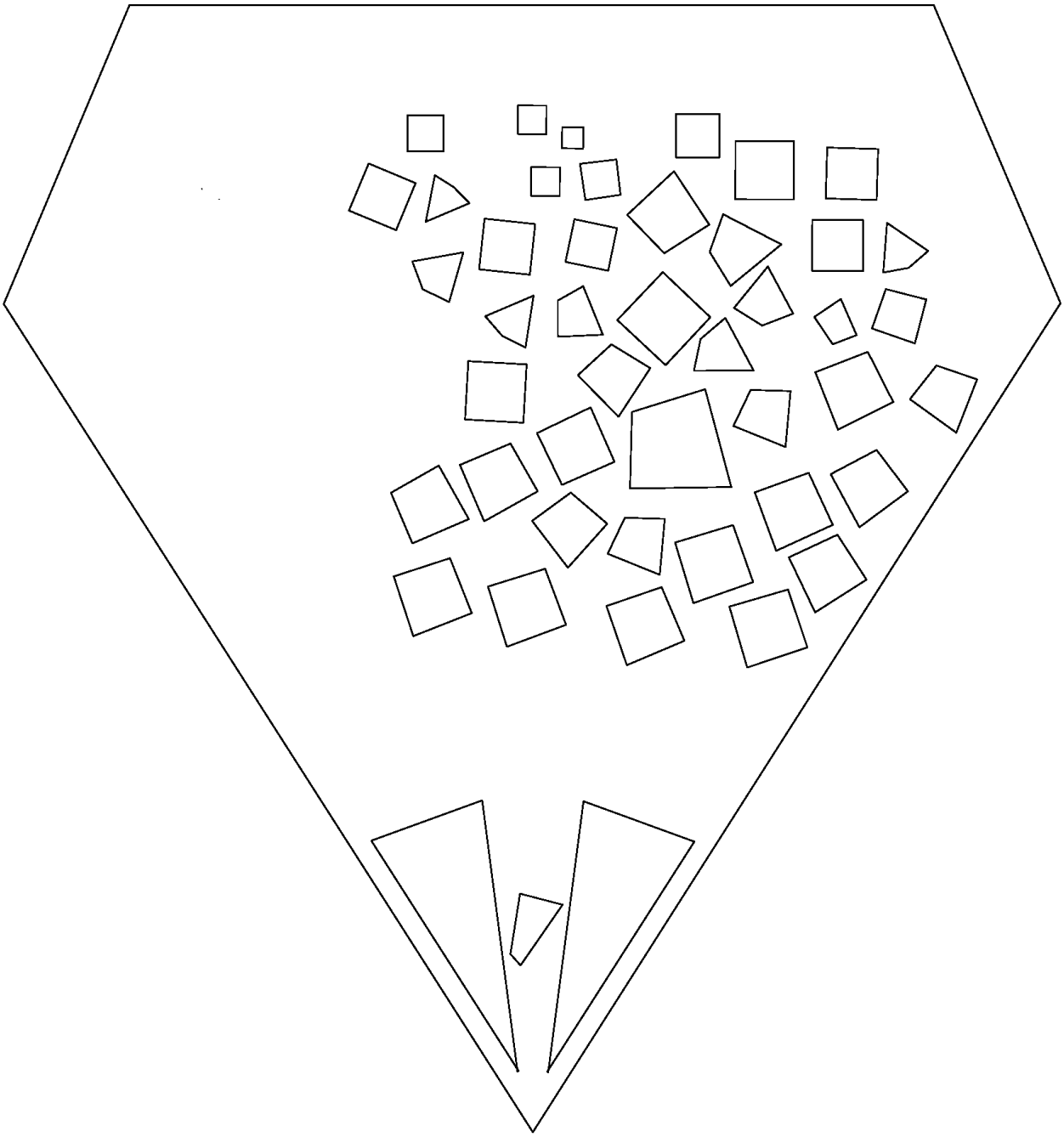
Describing each module, we refer to the knobs as numbered and the fingerboard directions Left, Right, Up, Down. See below - knobs effect U,D,R,L finger operations. INL and OUT refer to hardware routing (only out in Lachrymarum - a hum).

Tenebrarum in detail



ADC doubles knobs with fingers (in parallel), SW is switches for hardware options, Filt is filter-related, O/OSC is oscillator and amplifier related.

Bare patchboard to print/colour in



The knobs

1- These first three knobs are the same in all synths (placement only differing as above). This first knob selects one of 16 modes, divided into basic modes and mirror settings, which effect how The Dark Interpreter develops and is played/reflected. Each mode effects the behaviour of the finger-board and the second, third and fourth knobs. Modes allow for entry into the core plague code (fingers in the code), audio settings, villager parameters and mirror settings. Behaviour is different for each set of modes (see list of modes below). Finger pressure also effects varying parameters for each mode. Nearly all modes provide sufficient (lack of) control to allow the Dark Interpreter to be played solely in each mode. Some modes effect code generation, some audio generation, and some operate at the intersection of these two domains.
2- This knob controls specific settings within the 16 modes (**only when we have a finger on any of the pads of the finger-board**).
3- This third knob is primarily used when certain parameters are attached or mirrored onto it by way of some of the modes. In the case of Suspiriorum/Tenebrarum this knob also offsets the distortion outside any mode, and is used to set the filter/feedback effect (when selected) in mode 1. Other modes also make use of this knob for certain settings.
4- This knob also controls specific settings within the 16 modes (**only when we have a finger on any of the pads of the finger-board**).
5- The last knob strictly controls the hardware operations and signal routing, including opening up of routes, and settings to the skin (we call this unhanging of hardware options). Here we can set the signal path through analogue filters, digital filters and various distortions. Note: With this hardware knob set hard left to zero there is no hardware processing of sound (as in Mater Lachrymarum).

In the case of Lachrymarum (no analogue hardware), this last knob controls outgoing sample length.

Those modes

1- EFFECT and INPUT. One of the most important modes with very direct feedback.

In the case of both Tenebrarum and Suspiriorum each finger direction defines which input is used as follows

U as straight audio in. D as feedback (used for delay style operation). R as amplified finger input (marked INL) on fingerboard. Unused on Lachrymarum. L as previous input with all hardware clocks unhanged.

With finger in place knobs 2, 3 and 4 define effects on incoming samples, filter and outgoing samples respectively.

In the case of Lachrymarum knobs 2 and 4 define incoming and outgoing effects. Direction is unused.

In all case, finger pressure effects any effect modulation when selected.

2- DIRECTION. Left and right fingers select direction for various code and audio plague walkers (selected by the second knob). Step size is selected by the fourth knob. Speed of walking is controlled by the fingre pressure. Up direction assigns worming to that walker, and down allows the finger to enter directly the direction.
3- WRAPPING. This mode sets the start(second knob), wrap(fourth) and step(finger) for Up as incoming and Down and outgoing samples, Left sets incoming villager or grains, Right as outgoing villagers.
4- HARDWARE. For Tenebrarum and Suspiriorum we set the hardware walker settings using the second and fourth knobs for varying hardwares set by the fingerboard. In the case of Mater Lachrymarum these set the code walkers.
5- EXECUTION: In this mode we can sets the maximum black stack size(second knob) and the executable process(finger) for code runners on each direction including the total execution stack itself. With any finger down we can set the maximum village extent (fourth knob).
6- DATA WALKERS: Setting the start, wrap and step for code walkers
7-11 MIRROR (ATTACH). In these essential modes we mirror or attach settings to a range of parameters and code by selecting a group to attach. The group start is set by fourth, wrap/extent of the group by second. Directions indicate what is to be attached (up is detach), down is head (the two fangs on the head or inserted in body in the case of Tenebrarum) or skin (other devices), left is third knob, right is data. Groups are within modes as follows:
7-audio, hardware and code settings 8-villagers themselves 9-function stack 10-automata stack 11-leaky cpus
12- ALGORYTHMICK attachment. In this mode code determines how the group is configured across all domains. The second and fourth knobs control the code segment which is used. Again directions control exactly what is attached.
13- SWOP. Settings, villagers and code segments are exchanged by direction with knobs as follows. Second as extent, third as source offset, fourth as destination offset.
14- COREDUMP. Up and Down fingers dump data between code and settings/villagers in chunks determined by second and fourth knobs.
15- INFECTION. Runs an infectuous process across all settings, villagers and processors. Parameters of infection are controlled by the three usual knobs.
16- FINGERS in the CODE. No knobs here, fingers poke directly into code, villagers and settings.

A sample inquisition

This trial is decisive. You are now satisfied that the apparition is but a reflex of yourself; and, in uttering your secret feelings to him, you make this phantom the dark symbolic mirror for reflecting to the daylight what else must be hidden for ever.

The inquisition should follow the mood of the interpreter, perhaps exploring each mode in turn or moving frantically between modes, swithcing direction and

tact. The first mode is perhaps the most important with direct feedback from effects and changes of input. A hardware setting and approach can also be fixed in advance.

Mirror modes are also important and care should be taken as to the attachment, if you intend using primarily a knob-driven interrogation or the head/fanged interface of Tenebrarum. A quick fix would involve rotating the mode knob, with finger on desired attachment, and with second knob (extent of attachment) far over clockwise (maximum).

The final modes, such as INFECTION and FINGERS in the CODE, can also be useful in breaking the mode of interrogation open.

Each interpreter should define their own relation and approach to inquisition.

The hardware

The Dark Interpreter operates as contagious sample or village granulator, distortion, and unique sound generator based on a speedy ARM processor allowing for 16 bit sampling at 32/48KHz, and with a sample memory of around one second (extended by undersampling).

The Dark Interpreter is delivered in three versions, all fully assembled and tested, and features high quality ALPS potentiometers, optional BOSS style 9v power socket (**+9v/positive on the outside, negative centre, minimum 300mA**) or battery clip, and full size (6.5mm) JACK input and output sockets. Please note that versions cannot be extended, they are not cross-compatible.

In the case of Mater Tenebrarum, and according to selected hardware mode, all analogue hardware (input, output, filters, distortion, amplification, oscillation) can be accessed and routed by skin and fingers using the extended hardware board. Hardware points can easily be probed and discovered.

Addendum

- In certain cases it may be necessary to touch one finger against the marked V pad if the fingers do not seem to trigger operations.

FAQ

- Which power supply (PSU) should I use?

An BOSS style 9v power supply with +9v/positive on the outside, negative centre pin, and delivering a minimum of 300mA. 600mA is good.

- Are there any differences between release/dated versions?

The Dark Interpreter code base changes slightly over time. At intervals there will be special edition releases reflecting major changes and new approaches.

The latest (Diana) release of August 30th fixes a few very minor bugs, and makes a few small tweaks to the first release. The only major change is switchable hardware walkers for Tenebrarum and new 32k samplerate.

- How can I re-flash the new code base/firmware?

All code is freely available from: https://github.com/microresearch/dark-interpreter

You can also ask m@1010.co.uk for the flash image if you don't want to compile the code. To upload the code you will need a suitable ARM STM32 programmer such as the stm32f4-discovery board. This should be correctly attached to the four bare holed socket near the top of base board (from left to right: 3.3V, SWCK, GND, SWDIO). Then simply (using a program such as $\text{stlink}_{\text{flash}}$ upload the code. Any local hackerspace should be able to assist in this operation.