

# Recording Studio



Living in a small space is great for keeping on top of what I have as I just don't have room for any junk. However, when I was faced with siting a new computer-based project recording studio, I had only one option.... a room that measures a tiny eight feet by five feet. Just getting past the desk that I had installed in the room instead of the original bed was difficult enough, but to fit much more in was going to require a total redesign.... What the process achieved was nothing short of a miracle & it is a much nicer place to work in now.

# The Design Process



This design is simply about creating an efficient layout for my project recording studio in a confined space. I deal with the ways in which I actually use the different pieces of equipment as part of my Making Music design. When I bought my keyboard, the only place I had to put it was in my living room. To begin with this was fine, but after a while I really wanted it somewhere a bit less in the way. It was clear that I had to do a bit of designing & the prime site for this was the tiny room that was originally the small bedroom & that I had taken to be my office.

## Observations:

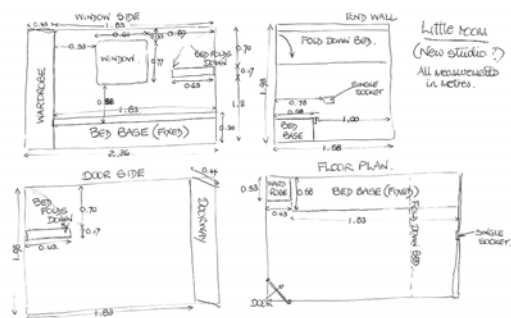
- \* The keyboard is dominating the living room.
- \* The desk takes up a lot of space in the office.
- \* I bang my knee on the corner of the desk too often!
- \* The office furniture could be much more efficiently arranged.
- \* I need to plug the keyboard into the computer to record it.
- \* The office also houses my clothes & filing.
- \* My home feels cluttered & that bothers me!
- \* I work much better in a tidy environment.
- \* Permaculture design is very good at addressing such problems.

I could see for a long time that I wasn't making the best use of the space in my office, but not having the incentive to improve matters meant that I put up with a not very satisfactory situation for rather too long. Perhaps that was for the best, or I may have done something that made this design more awkward to implement.

## Boundaries:

- \* The small amount of space in my mobile home.
- \* The tiny dimensions of the office:  
(2.26m long x 1.58m wide x 1.98m high)
- \* Standardised furniture sizes.
- \* Mains supply capabilities?
- \* Ethical; I want to reuse materials if I can.

For once, finances weren't one of my boundaries, but I still wanted to reuse materials where I could, so I would buy new only when I had no alternative.



## Resources:

- \* A salvaged slightly warped kitchen worktop.
- \* My current office desk (originally bought secondhand).
- \* Several boards from dismantled kitchen units.
- \* The fold down bed in the office.
- \* Wood off-cuts of various sizes.
- \* My permaculture design skills.
- \* My woodworking skills.
- \* My computer & electrical knowledge.
- \* Knowing where to get very cheap furniture.



It's always good to have the opportunity to reuse things that other people have once considered to be rubbish. Sometimes I find an immediate use for the items that I salvage, sometimes things hang around for a long time. One or two of the items in this photo fall into the latter category. I do know what I'm going to make with them, I just need to make the time to get around to it!

### My wants & needs:

- \* An inviting working environment.
- \* To have everything easily to hand.
- \* To fit it all into the office.
- \* ..& still be able to move about comfortably!
- \* To see my garden out of the window.
- \* To apply permaculture to an indoor space.
- \* To have room for my original PC & peripherals.
- \* To still have room to store my clothes.
- \* To be able to remove everything & leave no trace (this is a rented caravan).

### Evaluation:

Having decided to design my office space properly I set out upon a cyclic process. So far I had looked at the physical furniture itself with which I aimed to house my studio equipment. Now I needed to also look at each new piece of equipment in turn as I added them to the studio. Thus the Evaluation process became ongoing over a period of about a year.

For each new piece of equipment that I added to the studio I needed to perform it's own design process. I address each of these in turn at the point that they are added to the studio set-up.

**Observation:** What are it's physical dimensions? What shape is it? What connections does it have? What does it need to connect to in my setup?

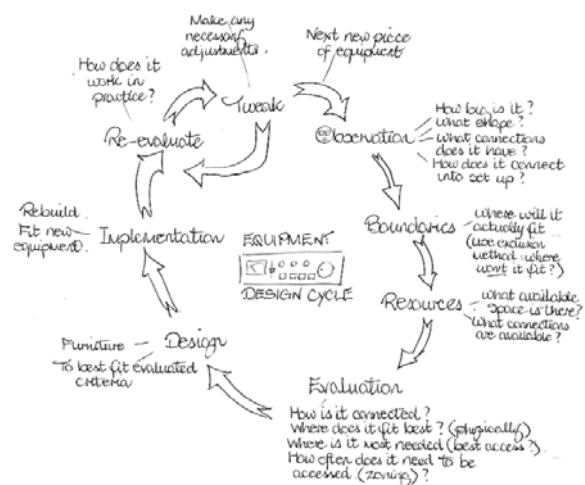
**Boundaries:** Where will it actually fit? (where won't it fit?).

**Resources:** What available space is there? What connections can I make with other equipment?

**Evaluation:** How is it connected?

Where does it fit best physically?

Where it would be best sited in relation to everything else? How often does it need to be accessed? (zoning).



**Design:** The furniture to fit it in. To best fit the evaluated criteria.

**Implementation:** Rebuild the furniture. Fit the new equipment in.

**Re-Evaluate:** How does it work in practice?

**Tweak:** Make any necessary adjustments.

The cycle continues around Re-Evaluate, Tweak, until a new piece of equipment arrives & we start back at Observations again.

**Zones:** I have created my own set of zones for this design; zone one is for equipment that I will need to interact with a lot in my use of it (e.g. either type of keyboard). Zone two is equipment that I will need to adjust the controls every now & then. Zone three covers equipment that need no more perhaps than just switching on & off. Clearly zone one equipment will need to be right at hand, zone two within easy reach & zone three can go wherever I can fit them in.

I will present my evaluations in the distinct phases in which I carried them out. Each was based around the arrival of a different piece or pieces of equipment.

### **Phase One:**

This phase was the initial redesign of the office space, instigated by my purchase of the keyboard. My first task was to utilise the space a lot better, which clearly involved doing something more efficient with the desk. With an instrument of the size of the keyboard, I had to do a drastic redesign anyway to accommodate it successfully, so it was the perfect incentive to get on with the job at last. I had to decide where would be the most efficient place for me to work & that had to be the place where I had access to the most pieces of equipment at once. This was obviously the centre of the room; there wasn't enough space here to design a triangle between most-used objects as in a kitchen!

However, which way I was seated was still to be decided & having things close to my sides would put them most in reach. Clearly my front to back axis needed to run the long axis of the room.

I had also not been making the most of vertical space in the room. I could accommodate so much more by addressing this issue; the fold-down bed had certainly been an unused resource. With the bed down, I had a limited amount of headroom underneath it, but it would still accommodate my monitor on my desktop.

I only had so much space on the window side, otherwise I would start blocking my view of the garden & be unable to reach the catches to open the window. Another observation that I had made was that this room gets hot like the rest of the mobile home in the summer months & that window will need to be openable! I need to retain access to the plug socket on the back wall & any trailing sockets that I might plug into it.

### Motif keyboard:

- \* Size: 105 x 40 x 13cm.
- \* Shape: Very wide, fairly flat.
- \* Connections: MIDI in/out/thru, TRS in/out/assignable, USB in/out, optical SPDIF.
- \* Connect to set up: Outputs to computer (recorder), MIDI modules, studio monitors.
- \* Fits: On a wide flat surface.
- \* Available space: Either side of room.
- \* Available connections: Computer (recorder), MIDI modules, studio monitors, DAT.
  - \* How connected: USB MIDI to computer, MIDI to modules, TRS jacks to computer or studio monitors.
- \* Best fit: Under window (other side blocks doorway in same way as desk did).
- \* Best access: From front/above at waist height.
- \* Zone: One.



I need to have the opportunity to connect the TRS (Tip/Ring/Send) output to either the computer for recording or directly to the studio monitors when the computer doesn't need to be on.

### Tascam DAT recorder:

- \* Size: 49 x 33 x 15cm.
- \* Shape: 3U rack.
- \* Connections: Phono in (x1)/out (x2), SPDIF coax in/out.
- \* Connect to set up: To & from computer/Zoom.
- \* Fits: In any stacking space.
- \* Available space: On desktop.
- \* Available connections: Computer, Zoom, Motif, studio monitors.
- \* How connected: SPDIF in/out to computer.
- \* Best fit: On desktop.
- \* Best access: Front panel; occasionally to rear.
- \* Zone: Two.

The DAT will need to feed a SPDIF coax output to both the Edirol (input DAT songs into the computer) & the CD burner (record DAT tapes to CD) & so requires a signal splitter.

### Zoom digital multitrack recorder:

- \* Size: 43 x 26 x 8cm
- \* Shape: Laptop like.
- \* Connections: XLR Mics (x2) in, line in, phono out, optical SPDIF out,
- \* Connect to set up: Outputs to Motif, computer, DAT.
- \* Fits: On top of desk (top of stack), on top of fold-down bed.
- \* Available space: Desktop.
- \* Available connections: Computer, DAT, studio monitors.
- \* How connected: Optical to computer, phono to DAT/studio monitors.
- \* Best fit: On top of desktop stack; with headroom to operate controls.
- \* Best access: From above.
- \* Zone: Two.



### Yamaha MSP5 studio monitors (x2):

- \* Size: 27 x 16 x 18cm.
- \* Shape: Upright, tall boxy.
- \* Connections: XLR in, TRS in.
- \* Connect to set up: From computer/Zoom/Motif.
- \* Fits: On any solid surface.
- \* Available space: On fold-down bed, on desktop.
- \* Available connections: Computer, Zoom, Motif, DAT.
- \* How connected: XLR from computer, TRS from Motif (& Zoom/DAT via adapter).
- \* Best fit: On fold-down bed.
- \* Best access: Front (switch, volume & listening); occasionally to rear. Pair equally spaced either side of listener.
- \* Zone: One.



Armed with all this information & some principles I was able to come up with the main elements of a design.

### Principles:

#### Minimum effort for maximum effect:

- \* A simple rearrangement of the desk structure & folding down the bed easily creates so much more room in the office.
- \* Putting the chest of drawers side by side & simply laying a board over the top creates so much more again!

#### Multiple supply:

- \* If the computer is off, the Motif, DAT & Zoom also need to be able to directly connect with the studio monitors.
- \* I need enough mains sockets to power everything.
- \* Motif has an onboard sequencer & the computer has a software version too.
- \* MIDI & audio files can be backed up to the computer hard drive (& CDRW) or DAT tape from the Motif or Zoom.



### Multiple use:

- \* Studio monitors can connect to & playback music from the computer, Motif, Zoom or DAT.

### Relative Location:

- \* Everything needs to be able to plug in to the computer.

### Stacking:

- \* The DAT player could sit physically underneath the Zoom.

### Zoning (Relative location to me) & Exclusion (where it won't fit):

- \* The desk needs to sit on the floor & can only do this along the end or right hand walls.
- \* The wardrobe & bed base are fixed in place.
- \* The back wall isn't usable as the wardrobe door opens across it & the doorway needs to be kept clear.
- \* The window needs to be kept clear to allow maximum natural light in to the room.
- \* The walls are not sufficiently strong to take the weight of shelves etc.
- \* The keyboard needs to be at a playable height, not blocking the door.
- \* The studio monitors sound best at head height & a few feet away.
- \* The studio monitors need to be equally spaced in an equilateral triangle with me & facing me.
- \* The Zoom needs to be placed where I can get access to it's top panel controls.

### Phase Two:

This phase started when I bought the reverb unit & the microphone preamp & I no longer had enough room on the desktop to accommodate all my stacking equipment under the fold-down bed & still be able to access the top controls of the Zoom.

I needed to design somewhere else for at least some of them to go....

### MPX200 reverb Unit:

- \* Size: 49 x 14 x 4.5cm
- \* Shape: 1U rack
- \* Connections: MIDI in/out/thru, SPDIF coax in/out, TRS in/out.
- \* Connect to set up: From & back to computer.
- \* Fits: In any rack space (low profile).
- \* Available space: Will have to make some! Under Motif keyboard?
- \* Available connections: Computer.
- \* How connected: TRS in/out.
- \* Best fit: On desktop or under keyboard, top of stack (shallow unit).
- \* Best access: Front panel, occasionally rear.
- \* Zone: Two.

### TLA Ivory microphone preamp:

- \* Size: 49 x 20 x 9cm
- \* Shape: 2U rack
- \* Connections: XLR in (x2)/out (x1), TRS in (x2)/out (x1) - all mono.
- \* Connect to set up: Input to computer.
- \* Fits: In any rack space (when I create some!)
- \* Available space: None! Will have to make some. Under Motif keyboard?
- \* Available connections: Computer
- \* How connected: XLR to computer.
- \* Best fit: On desktop or under Motif.
- \* Best access: Front panel, occasionally rear.
- \* Zone: Two.



## Principles:

### Minimum effort for maximum effect:

- \* Simply raising the keyboard with a very basic shelf unit creates more room for equipment underneath it.

### Multiple supply:

- \* The reverb unit provides a large collection of preset & adjustable reverbs & effects; the computer software provides a lower quality backup.
- \* The microphone preamp provides a better quality alternative to the Zoom & computer sound card preamps.

### Multiple use:

- \* The reverb unit provides reverb algorithms & also takes some load off the computer CPU.
- \* The microphone preamp can take different input levels (line & mic) on different cables (balanced & unbalanced).
- \* The microphone preamp can also act as a compressor or equaliser fed externally.

### Relative Location:

- \* The reverb unit only interacts with the computer & wants to be close to it.

### Stacking:

- \* Equipment can be fitted underneath the Motif if it is raised up on a shelf.
- \* Stacking equipment modules; need deepest on the bottom & shallowest on the top.

### Zoning (Relative location to me) & Exclusion (where it won't fit):

- \* The same exclusions as above still apply.
- \* Raising the Motif places it's keyboard at a more playable height for me.
- \* The reverb unit & microphone preamp both want to be close to hand.

### Phase Three:

This phase was instigated by the decision to purchase the dedicated music computer & the mixing console. While I had designed in some expansion capability with the previous phase, this would only accommodate the music computer case. The computer keyboard & mixing console were another thing entirely. I also knew that I didn't have room for a second computer monitor, but I had the foresight to have bought one with two signal inputs; one digital & one analogue. Thus I knew that I could feed both computers to the one monitor & switch between each one with the simple press of a button. Soon afterwards I also bought the Dark Star analogue synth & so I will include it in this phase for simplicity.

#### Carillon music computer:

- \* Size: 49 x 42 x 18cm
- \* Shape: 4U rack
- \* Connections: USB, dedicated connection to Edirol audio interface.
- \* Connect to set up: Central hub (via Edirol); most elements will connect through the music computer.
- \* Fits: Large rack space.
- \* Available space: On desktop, under keyboard.
- \* Available connections: 8 in/8 out; selecting from XLR, TRS, SPDIF coax & optical (on Edirol), plus USB.
- \* How connected: USB MIDI to Motif, all else via Edirol.
- \* Best fit: Under keyboard.
- \* Best access: Front panel (on/off switch, drives), occasionally rear.
- \* Zone: One (monitor, keyboard) Three (unit).





### Houston mixing console:

- \* Size: 54 x 44 x 8cm
  - \* Shape: Gently slopes back, almost square, large!
  - \* Connections: USB, MIDI in/out/thru.
  - \* Connect to set up: In/out of music computer.
- 
- \* Fits: Nowhere obvious! Will need to create something.
  - \* Available space: ?? Build into desk as slide out shelf?
  - \* Available connections: Music computer.
  - \* How connected: USB to music computer & dedicated software.
  - \* Best fit: On a flat surface, could rebuild desk & widen drawer side.
  - \* Best access: From front/above.
  - \* Zone: One.

### Dark Star analogue synth:

- \* Size: 34 x 23 x 7cm
- \* Shape: Laptop like.
- \* Connections: Phono in/out, MIDI in/out/thru.
- \* Connect to set up: From Motif (keyboard), to studio monitors/Edirol.
- \* Fits: On a smallish space on a worktop.
- \* Available space:?? On fold-down bed?
- \* Available connections: Edirol, studio monitors, Motif.
- \* How connected: MIDI from Motif, phono to Edirol/studio monitors.
- \* Best fit: On a slide out shelf somewhere?
- \* Best access: From front/above, occasionally rear.
- \* Zone: One.



### Edirol Audio Interface:

- \* Size: 49 x 20 x 4.5cm
- \* Shape: 1U rack
- \* Connections: 8 in/8 out; selecting from XLR, TRS, SPDIF coax & optical, dedicated cable to music computer sound card.
- \* Connect to set up: To music computer, interfacing with most equipment in the set up.
- \* Fits: In small rack space (low profile unit).
- \* Available space: Under keyboard, on desktop.
- \* Available connections: Music computer, all outboard equipment.
- \* How connected: 8 in/8 out; selecting from XLR, TRS, SPDIF coax & optical, dedicated cable to music computer sound card.
- \* Best fit: Under keyboard, on desktop.
- \* Best access: Front panel, rear panel occasionally.
- \* Zone: Two.



I clearly had to create some more space for the extra computer keyboard & the mixing console & I had to be able to have hands-on access to these whilst being able to see the computer monitor as well. The only logical place for them was going to be in front of me.

It was also logical to put the equipment that I needed zone two access for on the desktop, where they were most in reach of my right hand. I had my connections schematic map too, so I could design in the most efficiently short connections between the different equipment modules.

## Principles:

### Minimum effort for maximum effect:

- \* A pull-out shelf added to the Motif shelving unit allows the siting of top-control panel equipment there (Zoom or Dark Star).

### Multiple supply:

- \* Even though they are both optimised for different tasks, either computer could be used to do the work of the other in the event of a breakdown.
- \* Mixing desk operations could still be performed with the mouse, just not as efficiently.

### Multiple use:

- \* The monitor is used as the display of both computers.

### Relative Location:

- \* The mixing console needs to be in front of the monitor.
- \* The reverb unit now interacts only with the Edirol audio interface & wants to be close to it.
- \* Everything needs to plug into the music computer or the Edirol audio interface.

### Stacking:

- \* Racking units with front panel controls can be stacked on top of each other.

### Zoning (Relative location to me) & Exclusion (where it won't fit):

- \* The same exclusions as above still apply.
- \* The two computer keyboards need to be in front of me & at as close to typing height that I can arrange.
- \* The mixing console needs to be at my fingertips when I am using it.
- \* Zone two equipment needs to be easily to hand (my right hand?).

# The Final Design

## Phase One:

The key to creating more space in the office is clearly to rebuild the desk in a way that would allow it to fit along the back wall. The simplest way to do this is to remove the worktop & bring the two side units together, reattaching the top so that it overlaps to the left. When against the back wall, the top overlaps the bed base, giving as much work surface & storage on it as before. The obvious place for me to sit is in the middle of the room facing the plug socket. The computer monitor can be placed in front of me on the desk & the mouse to its right. The DAT recorder can be placed on the right side of the desk where I can easily reach it with my right hand & the Zoom multitrack recorder placed on the top of it. The controls on the top of the Zoom can also be easily operated from here. The next simple piece of design involves lowering the fold-down bed & laying a slightly warped worktop that I have in my shed of resources over it. It is as close to perfect in size as it is only a few centimetres short of the width of the room. On the new work surface I'm placing my computer printer & scanner & the studio monitors. The latter are placed at equal distances from the side walls & from my head & pointed to a spot just behind me.

Having them up there means that they will generate a lot less false bass than if they are on the desktop in a much more enclosed space. I'm also ensuring that they aren't diagonally in line with the corners as this can cause the same problem. The top shelf also has room to house other items like paper for the printer.

Under the window I can create a lot more space & accommodate the Motif keyboard by placing the two small chest of drawers side by side & laying another of my stored resources; a side panel from a tall kitchen cabinet, over the top. This makes the perfect surface for the Motif keyboard to sit upon, at a good height for me to be able to play it while sitting down & still have a clear view of the garden out of the window.



The computer tower needs to go on the left, despite the extra lengths of cabling this requires, because the fold-down bed prevents it fitting on the right.

This whole rearrangement opens up the right side of the room & provides an opportunity to bring in a set of shelves for storing my CDs, books & magazines upon. These will have to be fairly shallow though, so as to not intrude too much into the room space & high enough to make the most of the vertical space available. These shelves will have to be freestanding as the wall is only made from thin hardboard attached onto battening & not strong enough to take shelf brackets.

## Phase Two:

While there is a physical limit to how high I can raise the keyboard (the fold-down bed overhangs it), a practical one (I have to be able to play the keyboard, open the window) & an aesthetic one (I want to see my garden out of the window), I could still raise it up a bit. My limit is realistically governed by the fold-down bed & so I'm building a simple shelving unit from more kitchen unit boards so I can accommodate some stacking equipment underneath. Such equipment is always made to a standard width so that it can be fixed into rack systems in studios, so the space between the uprights is predetermined. I can then put the reverb unit on top of the DAT recorder on the left hand side & the microphone preamp on top of the CD burner on the right.

This leaves the Zoom multitrack recorder with the desktop all to itself. This gives me easy access to its top panel controls & the option to expand further by adding more stacking units in the future if needed. The computer keyboard still doesn't have anywhere tidy to live & has to remain on the top of the Motif in between being used. A more satisfactory arrangement is certainly needed for this.

## Phase Three:

In order to accommodate the existing computer keyboard, plus the new one & the mixing console; all of which need to be in front of me, I need to rebuild the desk.

I want access to these items at different times, so I am making three pull-out shelves for them which puts them in reach when I am using them & out of the way when I'm not. The top two only pull out a small distance, as the keyboards are not very deep. The mixing console is much deeper however & so I'm using much longer runners to allow this to be pulled out far enough for it to be fully accessible. I have also put a sliding shelf on top of the desk on the right hand side. This is for the stack of equipment to sit upon & this allows me to pull the stack out if I need to get access to the rear panels to move cables around. The stack here will now consist of the DAT recorder at the bottom, with the microphone preamp on top of it, then the Edirol audio interface & finally the reverb unit. These are stacked in descending order of depth for greatest physical stability. The Edirol also connects directly to the other three items & so it is an ideal place for it to be to retain the shortest possible cable runs between them.

I am adding a fifth sliding shelf to the shelving unit under the Motif & this is illustrated in the previous diagram. This allows me to put the Dark Star synth on top of the CD burner there, giving me good access to the top panel controls when I am using it, but again allowing me to push it back out of the way when I am not. The music computer will sit under the right hand side of the Motif, where the dedicated cable from the Edirol can reach it (this is a fixed length that I cannot shorten) & it is also in good reach of the Houston (via USB connection) & the monitor too. Lastly, I am adding a double mains wall socket to the single one currently on the wall, to cope with all the extra plugs that will need to be fed with electrical power.

This is the point at which this design currently stands, though no doubt there will be more tweaking at some point in the future.

# Implementation



As the design has needed to be one that evolved over time, the implementation process has taken place in phases, depending on my needs. This of course is a perfect example of the tweaking part of the design cycle in use. The first phase began with me needing to rebuild my desk, so that it fitted better into the room. Originally the desk consisted of

two identical looking units joined by the worktop & a back board. The simplest thing for me to do was to remove the worktop & bring the two units together so that they fitted along the back wall of the room. I left the worktop intact so that it overlapped the fixed bed base down the left hand side, just attaching it to the left hand unit in the new position. This simple action gave me a lot more space in the room.

My next task was to utilise the top space better. When I had originally moved in I had removed the bed down the right hand side of the room & put it into storage in the barn, making space for my desk. I also folded the top bed up into the wall, but utilised the small space between it's top edge & the ceiling to store my CDs upon. I removed my CDs into a box & folded it down again; it was definitely more useful this way! I found a slightly warped worktop that I had salvaged previously for such an eventuality & laid it on top of the mattress. Voila! One very useful deep shelf, perfect for housing my printer, scanner & studio monitors (speakers). Having all this space down the right side of the room had suddenly made it seem so big! I had however lost my CD storage shelf & the wall was begging to be used productively. I needed some shelving, but not any that would intrude too much into the room. The wall was also only made of thin hardboard, so any shelves would have to be freestanding. A trip into town immediately brought forth the solution. There they were in a secondhand furniture store; the perfect shelves, going for the bargain price of £6! My CDs could come out of the box again.





The new keyboard that I had bought for my music making exploration had up to this point sat in my living space, taking up rather a lot of space. After several weeks of this, putting it into this room was going to create so much space there again! I had taken the legs off of my two little chest of drawers units in which I stored my clothes & previously had them stacked one on top of the other. To accommodate my new keyboard though I decided to place them side by side on top of the left hand bed base & lay a spare melamine board over the top of them. The keyboard then sat perfectly on the top of this, leaving room down the left

end next to the wardrobe for my computer tower unit. The space in the back corner became home to a trailing socket board for all my equipment & the amplifier for my computer speakers. Underneath I placed the sub woofer unit, though I could see that in this arrangement, if I needed to get to it for any reason it was rather boxed in with only a small access hole at the front (see photo). I also lacked a home for my computer keyboard & I found myself trying out different arrangements like typing on my lap or where you see it in the photo, but none were very satisfactory.

At this point I bought a few more pieces of equipment for the studio; a reverb unit, a microphone preamp & a CD burner to add to the DAT recorder & ten-track digital recorder that I already had. I clearly needed more space to house them & so I built the unit on the left side of the photo. I went looking in my shed again for salvaged bits & pieces & came out with a few more pieces of old kitchen unit board. I used this to build a simple shelving system that raised the keyboard up & created space for the new equipment underneath. I also included a central upright to help support the weight of the keyboard.



I still hadn't sorted out my computer keyboard problem, though it was something that I got used to living with for a while. Then I decided to buy a dedicated computer, optimised for recording music & I had to consider how I would be able to accommodate not just the new unit, but the peripherals that came with it, including a large mixing console & an audio interface; another stacking unit.



I had reached my limit of expansion up the left side of the room, if I still wanted to be able to look out of the window at my beautiful garden (& I did!) & have access to the catches to open it too. I had also designed the previous shelving unit so that the keyboard just squeezed under the top bed & so I couldn't raise that any higher anyway. I looked at my desk again & realised that it required a more detailed rebuild, so I dismantled it & started from scratch. I did away with one of the drawers & the kickboards & arranged it so that the two filing drawers were placed one above the other on the right side.

On the left, which would sit in the centre of the back wall I could fit three of the drawers at the bottom of the unit & three pull-out shelves above them. These would accommodate the mixing console, my existing computer keyboard & the new one which was to come with the music computer. I didn't however have the runners I needed for this until I went back to my favourite shop & bought a cheap desk for £8 which had three pairs of them; one for each of the drawers. However, I still needed longer ones for the mixing console which had to pull out a long way & the stack of equipment that I wanted to put on the top of the desk & still have good access to the rear of for cabling.



I soon found a furniture maker though that sold me what I needed & a lot cheaper than I had anticipated. I used the worktop from the new desk as it was deeper & used the old one up to make the pull-out shelves with. When it was finished I was able to keep the mixing console & computer keyboards out of the way when not in use & have two mice side by side on the desktop. I was also able to route both computers to the same monitor by using it's analogue & digital signal inputs, switching between the two with the press of a button.



The new music computer fitted nicely underneath the keyboard on one side of the shelving unit & rearranging the other pieces of equipment left me with a stack which sat on top of the desk. I put these on another pull-out shelf in order that I might have good access to the rear panels for moving cables from time to time. Having worked out the lengths of the cables that I would need for this arrangement in advance I was able to buy a reel of it, plus the appropriate plugs for each of the ends. Making up my own leads saved me money & also ensured that the cable lengths were right when I came to plug all the elements of the studio together.

With all this new equipment I found that I had a lot to plug in to the mains too, even if it might not all be used at the same time. To sort this out I installed a new double socket on the wall & ran trailing sockets from each of these. The new desktop only extended as far as the chest of drawers, so I was able to fix the trailing sockets on the side of both units where they were out of the way & I could reach them. The new arrangement also gave me access to the subwoofer unit which had previously been boxed in. With all this electrical equipment around me I found the room more than a little 'buzzy'.



To help counteract this, I have some of my crystals take turns in the studio & I even found a secondhand deioniser at a car boot sale for £2 which now lives on top of the shelves. The last thing to sort out was my sitting arrangements. I already had a meditation stool that puts me at the perfect height for typing & viewing the monitor, but it was much too low for accurately listening to music on the studio monitors. A mere 50p bought me a fold up stool in my favourite furniture store, & that puts me at the perfect height for the job & still tucks out of the way when it's not needed.



Quite a lot of the equipment that I had bought for the studio had been end of line & reduced in price to make way for the new model. I had gone on-line & looked up old reviews to make sure that I bought the better equipment & as a result had a studio that I was really pleased with. One such end of

line item was this analogue synth which had been highly rated.

I found a home for it here, between the two computers. It arrived by courier on the 11th November.....

.....& the serial number?



Well, that's the design implementation finished, well at least up to now. I'm sure that I could find some other way to incorporate something new if I had to (the yield is theoretically unlimited!) Of course putting the studio together is only the beginning; learning how to use it creatively is going to take quite a bit longer as there is a lot that all this equipment can do. Of course, that is a whole different design.....

## Costings

The final costings for implementing my studio redesign were:

- \* Desk - already in office (free).
- \* Worktop - salvaged (free).
- \* Kitchen unit boards - salvaged (free).
- \* Second desk with incorporated runners - secondhand (£8).
- \* Extra runners for sliding shelves - new (£6).
- \* Shelving unit - secondhand (£6).
- \* Double power socket - new (£4).
- \* Folding stool - secondhand (50p).
- \* De-ioniser - secondhand (£2).

The total cost of the whole redesign was £26.50 - including the ioniser... I think that's pretty cheap myself.

# Design Review

## What went well

Again, the design implementation generally went very well. The highlights were; **Phase One:** Just simply rearranging the desk & folding down the bed made such a vast difference to the room. The task took me less than an hour to finish & as I didn't have very much equipment at the time, wiring all of it back up again was a fairly quick job too. What a transformation!

**Furniture:** Whenever I decided what I needed for the studio, I was able to find it really quickly & for virtually no money. The bookshelves were as good as ready to use, only needing a couple of shelves moving up. The second desk was a bargain for the runners alone, but also provided the new desktop & more potential resources for the future.

**Recycling:** I always enjoy being able to reuse things & this was a perfect opportunity for me to do so in a way that also allowed me to be creative with it.



## What was challenging

There were a few areas which were a bit more challenging.

**Studio content:** As I was learning as I went along about the workings of recording equipment, I was having to anticipate at each stage what else might be added to the studio in the future. This made each design phase a bit of a guessing game, though it all seemed to progress alright from each phase to the next.

**Equipment specifications:** Having ordered each item of equipment I then had to design a space for it, preferably before it arrived. This was not so easy though when I didn't have precise dimensions of the module or what inputs & outputs it had for cable connections with the rest of the studio. These were things that were harder to find out than I first thought & caused a few hold ups.

**Rewiring:** Adding new modules to the system & having to redesign the layout each time, meant that I wasn't simply just plugging one or two new things in. Because of the complexity of the interconnections, I basically had to unplug everything & start again from scratch each time.

**Filing drawer runners:** When I rebuilt the desk, I noticed that the filing drawer runners were not very strong. Perhaps unwisely I assumed that they would be OK & now that they aren't it is not an easy job to replace them. I continue to be challenged every time I need to open these drawers & know that I will be again when I come to fix them!

## What I would do differently

**Equipment wants:** Had I known from the outset what studio equipment I was going to get, I would have had an easier time designing the studio in one go. However, I did learn by using the equipment too, so I may not have been able to obtain such clarity so soon by waiting longer.

**Fixing filing drawers:** I should have fixed the runners of the filing cabinet drawers properly during my rebuilding of the desk. It would have been a lot easier to do while the desk was in pieces, but I was excited about getting the job finished & I put that part of it off to another day. When it will be much more difficult!