

The Structure and Design Philosophy of the Matrix.

by Professor Neon Cthulhu, Harvard.

Introduction by James Hong.

I'm deeply flattered to be asked to write this introduction to the work you are now listening to. I know that the author's publishers wanted me mainly because I'm a well-known trid commentator on technology. But I'm not ashamed of that reason if I can introduce one more person to Professor Cthulhu's outstanding work because of it.

I studied under Professor Cthulhu during his time at Stanford. His propensity to give lectures in the full priestly regalia of a Bishop in the Church of Starry Wisdom always caught the attention of us young students. But it was his startling insights into the very nature of the Matrix that held us spellbound for the duration of his talk.

Before you plunge forward into the more scholarly work of my former teacher and mentor, it may be worth reviewing the history and concept of the matrix in, shall we say, friendlier terms. Let us in fact say merely that I'm endeavouring to bring everyone up to the starting line.

Even in the very early years of the 21st century, computers (there's a term we don't hear much any more) were growing more complex than most people could manage. Certainly there was a technological elite which called itself 'geeks' who had a very good command of technology. But even they would be lost if placed in unfamiliar territory. Imagine if you will, that each piece of software, each different computer system had a different interface. Let me say that again. I don't mean in the way that Fuchi products have their distinctive colour schemes different to Renraku products. I mean that each new program required you to learn a substantially different set of commands, often accessed in substantially different ways. More than this, predictive interfaces were in their infancy. Whilst any good music program will understand what you are doing and present you with at most four or five options appropriate to your current activity, the 2007 equivalent would have a long menu system containing dozens or even fifty drop-down commands! How did people remember all the different options available to them and what they were for? Well, for the vast majority of people, they couldn't. "How do I save a file?" they would ask. "What do I press to make it print?"

But this wasn't all. Oh no! People were required to remember the physical locations of data they had stored. They frequently found they needed to move it from one place to another to accomplish different things or to access it from different locations. And the same was true for running common programs which were installed in different locations and could only be run there. In short, the data and software model of the time was intimately tied to real world physicality. The Internet, the forerunner of the Matrix, was despite common misconception today, not the same thing just without the VR. It was actually something much less, a mere directory of locations of physical computers. It couldn't last.

By the end of the first decade the concept of physical location of data was becoming less important. Instead, the concept of access rights and permissions was becoming the fundamental paradigm of what could and couldn't be reached. Neon Cthulhu will argue later that few realised at the time that this is what they were actually working towards, but it is without doubt that we were seeing the first beginnings of what would become the Matrix. But of course, the other side to the Matrix is the more, shall we say, visual side. Along with the decreasing significance of physical location, we were seeing

a corresponding increase in the complexity of accessing your data. In short we needed single identities for countless interacting systems. And more than this, we needed a way of accessing these countless systems in a way that the human mind could cope with. The two problems turned out to be the solution to each other as different systems became infinitely interoperable and almost simultaneously different companies unveiled visual tools for universal manipulation of any system. It took a little while, but soon enough common standards for representing the system and data to the visual overlay became established. In turn, the interface software grew to represent itself in standard ways to the systems that it accessed and this interface came to be called your 'persona.' If your persona was interacting with a system in any meaningful way, if it had access rights to that system, then it was "present" in that system and ordinarily this would be accompanied by a visual representation. It was through exploiting this persona interface that hackers would later be able to accompany so many of the technological miracles that they came to be known for. But this will be covered in greater detail in the book you're about to listen to. Suffice to say that we now had an embryonic Matrix.

But it wasn't until the virus struck in 2029 that the significance of all this was brought home to us. The origins of that virus are still hotly contested. Some say it was a natural result of the increasing complex nature of the world computer net. Others that it was the work of a terrorist group. One of the most morbid and depressing theories is that it was the work of a handful, or even one, individual who never anticipated the chaos that his messing around with self-replicating software would have. Who knows today? Maybe, still alive somewhere, is someone secretly knowing that they are responsible for the deaths of millions. If so, the guilt must be crushing. What we do know is that the team members of Echo Mirage, using persona software that was able to interact with the visual interface below the normal level of permissions used by ordinary visual interfaces. The immersion techniques used enabled them to exploit this in fascinating new ways. In short, no existing security system under the new model could stop them.

The rebuilding of the World's computer networks in the aftermath of the virus completed what had formerly been a slow evolution. The Matrix was born. The technology for immersive VR environment became available (albeit expensive) and the metaphor that we know to this day became established.

But a metaphor it remains. Few people today understand that. It seems so natural to us to zip around our virtual worlds, or to pull up a connection to our home node at any moment, that we have long since forgotten what any of it actually means. And that is what this book is about. When our persona stands in a node, and we see its virtual architecture around us, what is actually happening? In real terms (such as the word has meaning any more), software in our comm link (or occasionally our terminal) has been granted permission to carry out operations on a remote system such as our university library or a shop in the Mall. That software is a hyper-sophisticated bundle of processes that interpret the standard interface protocols and overlays reported to it by the accessed system into the virtual reality that the user perceives. The most common form of "attack" that a hacker or IC software can make against a persona incidentally, is manipulating these inputs, either through causing the system to pass erroneous data to the persona software or more commonly inserting exploit code into the running persona software. This can cause the persona to malfunction or even require a complete reset to clear itself of foreign code. Sometimes the two approaches are combined and the system itself is manipulated into inserting dangerous code into the persona software, bypassing many of the safe guards of a persona against other users passing data to it. Likewise, more beneficial programs such as those that repair our persona from such damage work on similar principles, scanning and verifying our persona software for inserted code or erroneous data. Of course few of us will ever be put in such a situation, much less imagine the neurological trauma of a simsense system

gone awry. But it is fascinating to examine the underlying processes of these functions.

And what of agents? Those indispensable genies that carry out our tasks for us? The incredibly distributed nature and standardisation of systems within the Matrix made it necessary for a user to dispense with archaic notions of running a program on this physical computer or that one. Happily the revolutions in processing power, first optical, now quantum and super-conducting, made it cheap and easy for systems to “loan” each other running processes. Whilst numerous safe-guards built into the deepest levels of Matrix architecture are designed to prevent self-replicating software (never again will we face something like that virus of 2029), systems are happy to accept transfers of an operating program from one to another. Given the proper access permissions, of course!

But agents are no more able to ride roughshod over the fundamental rules of the Matrix than humans, for all their kinship with the software systems they run on. One would think that this low-level awareness of the Matrix, this theoretical lack of need for the VR environment would enable them to dispense with its limitations also. And yet this is not so. If anything, agents are even more products of the conceptual structure of the Matrix than the humans of the modern age. In this book, Professor Cthulhu argues persuasively (and it becomes harder to deny his conclusions with each passing year), that an understanding of the underlying implementation of the Matrix is no longer necessary, or even desirable. We have no need, he says, to consider how our ears interpret vibrations in the air as words, or to waste thought on how our brain structures those words into meaning. And we no longer need to consider how a virtual action of picking up a file in the Matrix translates into a stream of data flowing this way or that. Indeed, attempting to do so will only distract us from achieving what we want. Relics such as the notorious Fastjack are a dying breed. Where are the Dodgers or Captain Chaos's of this new age? Five years ago, we saw the first roll out of basic Matrix operating software designed entirely by specialist software alone. The first step toward the Matrix creating itself. What use is it to try and find meaning beneath the metaphor, any more? Only our ability to operate within it matters now. The map has become the territory.

I hope you enjoy the work you are about to read. Consider that it comes not to explain the theory behind the Matrix, but to bury it.

Be seeing you,

-James Hong.

>>>>[Worth pointing out that Neon C. couldn't hack his way out of an IntelliFridge, so keep that in mind. Relic I may be, but I'm not dead, yet.]<<<<<

-Fastjack(13:04:03/12-23-69)