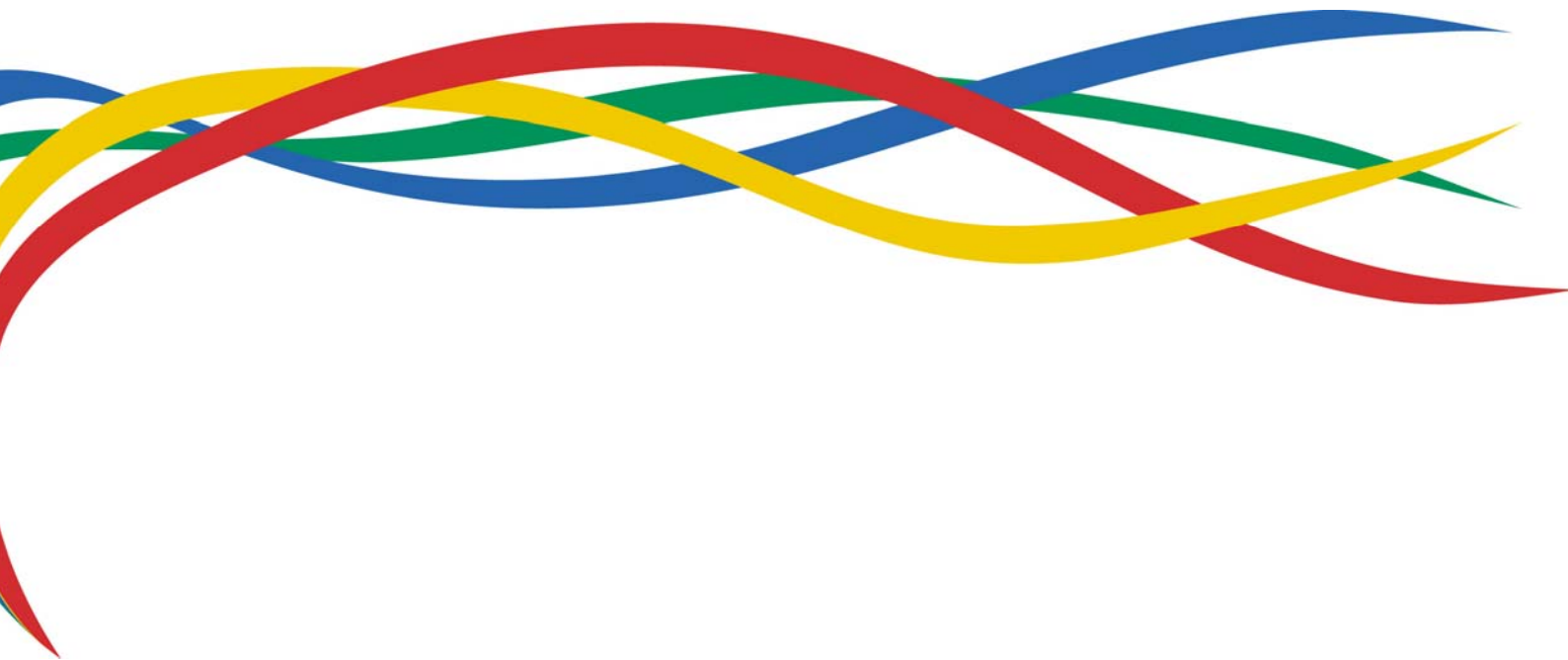


The Future Trader by Chris Skinner

Scenario: Lee Nixon, Future Trader, Water Commodities



Lee Nixon opened his eyes as the room's walls illuminated to intensity level 4ⁱ. The walls were set to brighten gradually from 1:45 a.m. and it was now 2:00. Another fifteen minutes and intensity level 10 would have been like a bright summer's day.

Lee liked the luminescent orange sunrise effect of the walls best as it made him feel warm and summery, even though the world outside was deep in the snows of winter and the dark of night. He usually woke at this time though, as he was known as a leader in futures trading in the world's rarest commodity: Water.

Water had been recognised as a potentially lucrative commodity market since the late 1990's, when the International Water Management Instituteⁱⁱ estimated that Earth would need 17% more water by 2025 than the water resources available at that time, in order to feed the world. The trouble was that no-one in the investment markets or elsewhere could really see how to capitalize on this opportunity until the 2011 Mercury Bomb when terrorists poured liquid mercury into Lake Meade, the largest reservoir in the USA. It was enough to wipe out all water supplies from the Lake for six months, and created a massive water shortage which cost the US Federal Reserve \$35 billion to overcome.

This single incident led to water becoming the world's hottest commodity, thanks to the US Government's introduction of the Water Act in 2012. This Act allowed Water firms to not only trade as organisations, but also to trade their future water supplies based upon each of their water purification plants, reservoirs and facilities. The higher the government approved rating the water facility, the greater the liquidity of the stock in that facility, rather than in the water firm itself.

The implications of this Act were not realised in full until the investment markets picked up on the fact that they could now trade in parts of companies, not just the companies themselves. As a result, spread betting and exotic options markets appeared where traders would invest in the likelihood of a firm's tall buildings being impacted by flood or earthquake, and even on a company's key executives being kidnapped or departing due to ill health.

Such investment classes were not approved by government departments but, once firms realised how lucrative the potential returns could be, the impact was soon felt globally with most investment markets creating micro-stock alternative investment vehicles.

In addition, everything was so automated with news algorithmics that this had become the only way for many traders to leverage their returns. For example, Lee had heard the previous day of a news alert that a mini-Tsunami would hit San Diego at 10:12 PST that evening. Without even having to check his portfolio, his systems had automatically moved his investments with exposure to California water firms and micro-stocks to positions that reflected other water traders on the network. Such activity was simple and commonplace with the latest news algorithmics services on the network.

The final movement towards Water becoming the key trading commodity was the impact of the cost and management of water supplies worldwide. Water had become a scarce resource – even rarer than oil for many of the Earth’s inhabitants – and now that the world’s equities and future markets had worked out how to capitalize upon the opportunities of this commodity through highly automated trading facilities, where not only fractions of stocks could be traded but also fractions of firms, the introduction of the Water Act had led to an explosion of trading in Water.

Exotic water options trading on the Water Commodities Exchange (WCE) based in London became one of the most liquid markets, literally, and Lee was known as the world’s leading Water options trader. It did not matter that Lee lived in Boston, although it is for that reason that he was getting up at 2:00 in the morning, not because he wanted to catch the opening of the markets as he would have done in the old days – there is no opening or closing of markets, markets trade 24 hours – but because he wanted to catch *WaterWorld*, the daily news update on the dedicated Water Channel, Water.net, which aired daily from London 8:00 to 8:30 GMT.

Of course, he could preset his view machine to catch *WaterWorld* and view it later on his watch or in his PTVⁱⁱⁱ, but then he would miss the opportunity to catch the trading liquidity during the first half-hour after the programme’s ending. The WCE literally spiked for an hour every day – from 8:00 until 9:00 GMT – during *WaterWorld*, after which everyone’s positions were set for the next 24 hours as the algo services and news algorithmics took over. So, everyone watched *WaterWorld* if they were involved in the water commodities markets, whether it was 3:00 or 23:00 local time.

Lee began his day as usual with a fast all-round shower and air-dry whilst dealing with any urgent messages. The shower panels, doors, walls ... everything was built for connection in his purpose-built pod^{iv}. Therefore, whilst showering, Lee was bringing up video screens in his Perspex-style shower screen simply by moving his hands around the screen to move different messages to where he wanted to see them or save them. As a result, he could check his messages easily whilst washing, with each message appearing in a specific space based upon where Lee pointed^v.

First there were a few video messages from other traders around the world, then a viewcard from his girlfriend who was travelling Asia and a commentary from his mother asking why he never viewed her^{vi}. No change there.

After air-drying and pouring himself some Detox juice, the next part of the daily routine was to watch the market movements using “*Market Recorder*”.

Market Recorder is a service provided by his employer, Slate Street, and is designed to be used by all of their traders globally.

It does what it says on the tin: records the markets. All market data, brokers, prices, exchanges, execution venues, liquidity pools ... everything globally is recorded by *Market Recorder*.

The great thing is that each trader can then build dynamic trading strategies and test them through *Market Recorder* by fine tuning dealings they may have made over the last few hours, days, months and years.

Each trader would also use *Market Recorder* in a different way. For example, if you were dealing in energy futures then you would use *Market Recorder* to record the main execution venues for the energy desk, which typically came down to Enx: the merged Nymex and ICE exchange.

But water was far more important than oil or gas, and Lee used *Market Recorder* to record the WCE (the Water Commodities Exchange) as that was the only venue that counted for him, although he did use eBanyse, the eBay managed NYSE, as well because it was ideal for generic equity dealings in the world's water firms through a single low latency global connection.

The fact is that the unlimited storage and indexing facilities offered by *Market Recorder* meant that it could record all of these market movements across all of these trading venues. Not only that but it could retain market tick data and associated feeds for twelve months in real-time and for five years in near-time. That way any trader could review their dealings against the market movements for as far back as most of them ever wanted, on any market venue. for any stock, bond or commodity in the world.

In order to use *Market Recorder*, Lee began by asking the service to playback yesterday's markets, his dealings, trades executed and rejected, returns through the day and so forth. This sounds simple but is much more complex in practice.

For example, the first thing *Market Recorder* does is present Lee with screens on the video wall. The video wall he's using at this point is around six feet tall by nine feet wide, and there are six screens running.

The first screen linked to the WCE as well as his other primary water execution venues of interest such as eBanyse, the next showed his total Water portfolio, a third showed his position by each broker and venue, another showed his position against the other Slate Street water traders – he wasn't the only one, but was recognised as the leader of the Water Desk, a fifth showed his position of trading and return against each market over the past twelve months and a sixth showed projected water supplies, firms and purification plants news and forecasts released during the same period.

Lee assimilated all of this information in seconds – he was used to it – and then began to ask for simulations of actions he might have taken the previous day. *Market Recorder* not only played out his positions, but showed recommendations as to where he could have improved his position and portfolio, as well as marking his positive movements. The service allowed him to very quickly roll forward and roll back against positions to see how things would have worked out if he had made those decisions.

It even monitored his trades against his execution policy to alert him as to when he might want to consider updating a best execution policy for new execution venues, and would illustrate how his position would have changed for major trades by visually demonstrating the difference of returns each movement would have achieved against speed of execution, versus price, cost and likelihood of the trade being fulfilled.

Alongside these system and market changes another big change, from a technology viewpoint, is that all of his interactions with *Market Recorder* were being delivered through voice commands and

hand movements – the keyboard had died out in the early 2010's as visual and touch communications became pervasive^{vii} – and he was trying various ideas out before the *WaterWorld* broadcast to see how he could have improved his returns on the previous day.

The other big change in Lee's approach, compared to the way markets operated ten years before, is that he had no primary broker or sell-side firms to deal with^{viii}. For a while, brokers had pushed technology heavily towards the buy-side with Execution Management Systems integrated with Order Management Systems, along with highly complex algo trading tools.

Lee's world was different, as all of these tools were built into *Market Recorder* which incorporated incredible smart routing intelligence. The result is that Lee did not even think about which firm or firms to trade through and did not check who executed which trades the day before. All trades were handled by *Market Recorder* itself, which basically would look at what Lee was trying to achieve and how, and then would route his requirements intelligently to any execution venue globally that could take the order based upon his requirements for speed, latency, price and cost^{ix}.

That is why, although WCE was his main choice of trading venue for Water commodities, it did not mean Lee traded there ... instead, he used the WCE to give him the best knowledge of what was happening in the Water markets. That is why Lee's orders in play at 2:00 in Boston were actually being routed direct to Hong Kong. But he had no interest in such mundane trivia, as the *Market Recorder* handled all of that for him.

Information was Lee's top priority.

Information to guide him in his investment process and strategy, and that is why Lee enjoyed the flexibility of the six-screen system which he could supplement with live news and other video services to enrich his knowledge base.

After half an hour of getting up to speed with the markets, *WaterWorld* came onto the Water Channel so he stopped playing with his portfolio and watched the feed coming in live. He also connected now with the other Slate Street water traders around the globe, with Yin in Kuala Lumpur, Dave in London, Theresa in Sydney and Sean in San Francisco.

The traders had no need to be based in the centres of water markets as information was their lifeblood. Nevertheless, as they were the key members of the Slate Street Water Trading Desk, they would meet at least once a day to trade knowledge on their investments, assets and portfolio, through a viewcall. Those meetings were always planned for three hours after *WaterWorld* but, during *WaterWorld*, they would talk using their video wall.

So, Lee now had a video wall next to his breakfast workout table that looked a little like a weird chess board, with six small screens from *Market Recorder* running in the lower portion of the wall, four 17" widescreen views of Yin, Dave, Theresa and Sean running across the top of the wall, and a large 60" screen of *WaterWorld* in the centre.

During the broadcast each of them made commentary. Their words were automatically being translated into subtitles by the intelligent voice recognition systems built into their systems. These subtitles appeared on-screen against each of their views.

Yin was commenting on China's Three Gorges Dam, run by Aqua America, and the fact the Government had ordered that the ageing processing plant needed to be upgraded by 2020, whilst Dave was sharing news that Russia's Gazprom had just made a bid to add the German utility RWE, which owned various water firms including the UK's Thames Water, to their portfolio. This would make Gazprom the world's largest integrated water and energy firm, and a further possible stranglehold on the markets.

Meantime, the Water Channel's *WaterWorld* broadcast was focusing on the breaking news of floods in California due to a mini-tsunami in San Diego. All eyes turned to Sean who was already on the case and reassured them that this had been forecast for 10:12 p.m. PST, but the fact it had hit at 10:14 would not cause an issue in their dealings.

As *WaterWorld* ended, they all returned to *Market Recorder* whilst leaving their video screens running. This was the way the 'team' worked – as a virtual team, all in touch via their video wall. Each could switch position to the other's *Market Recorder* view in real-time if required – in order to see the trading strategies of others in the network – or they could bring up a summary screen showing their position against the other Slate Street water traders as part of their main interface.

Lee programmed his trading, which included buying 1,000 shares short on Gazprom with an offset hedge of long on RWE in case the merger discussions failed, laying off Aqua America shares bundled with an increase in position in China's largest water processing utility, Sinowater. As part of his portfolio, *Market Recorder* recommended that he add a Yuan option as part of the Sinowater investment, as well as placing a bold hedge on water yields in the US markets post the tsunami and based upon the strength of the hit taken in San Diego.

This continued as a real-time dialogue with *Market Recorder* through the rest of day until 6:00 EST when, as per usual, the viewcalls for the day began^x.

Viewcalls delivered high quality communications that allowed the Water Desk team to come together as a virtual team each day. Effectively, it gave Lee a six foot tall by nine foot wide view of the other four guys in his group. Even though they were all spread around the world, they could just as easily have been there in the room with him, as the hi-definition three-dimensional connection felt real.

That is why no-one needed to meet or trade in an office block, but had the beauty of global, 24*7 trading facilitated from each of their personal pod spaces.

Summary

The Future Trader has:

- Unlimited bandwidth and storage allows complete market access, storage and knowledge
- Super-intelligent algo and multi-asset trading direct from the home, with smart order routing intelligence built into the network
- Trading in micro-stocks, parts of companies, rather than just equities is commonplace
- News algorithmics ensured that trading positions changed according to any breaking news on firms or markets
- Highly complex cross-asset class trading strategies delivered direct to the execution venues with no 'sell-side' broker-dealer involved – just trading and execution
- Broker-dealers now compete as execution venues with traditional exchanges whilst others have evolved to be specialist research analytics houses or boutique advisors
- Interactions with systems are intuitive and intelligent with voice and video interfaces, rather than mouse and keyboard
- Collaborative work with colleagues is through hi-definition video wall conferencing from home, rather than through 100-storey office blocks in downtown city venues

ⁱ This is based upon Panasonic's Interactive TV Wall. See <http://www.akhabarnews.com/en/review-63-Panasonic's+interactive+TV+wall,+the+demo.html> for a demonstration and the image below gives a view:



ⁱⁱ See <http://www.iwmi.cgiar.org/pubs/WWVisn/WWSDHtml.htm>

ⁱⁱⁱ PTV – Personal Transportation Vehicle. Each citizen is allowed to use biodegradable transportation services based upon non-water based emissions. These link to the government operated transport grid infrastructures. The early prototype was first demonstrated at Expo 1986 and is shown below courtesy of website <http://www.geocities.com/exposcruff/green/france.html>:



^{iv} Housing had become unaffordable for many citizens due to demand far out-stripping supply during the 2000's. This was not only due to the population increases through economic migration, but also because more people were living on their own in single households due to the collapse of marriage as an institution. Marriage and 'having children' were viewed as a thing of the 20th Century and most people now lived alone. Therefore, the Government introduced the POD – Personal Ownership Development – Scheme in 2011. PODs are government-provided low-cost dwellings that comprise a kitchen, bathroom, lounge and bedroom. Each POD is built of combustible materials in a mix of aluminium and durable plastics. PODs could then be attached to each other to build larger developments and even high-rise block buildings where needed, almost like Lego sets. PODs are allocated to individuals as needed, with the basic form available for any adult over the age of 21. If adults wanted to cohabit, they are allocated two PODs. Should those adults replicate – who needed to go through the pain of childbirth so children are developed in beakers – then they could have an extra POD for every two replicates they raised.

^v This is based upon Panasonic's Interactive TV Wall. The wall works on the basis of the user pointing and moving windows around on screen. Each window can be re-sized to suit what you are trying to view, and you simply move your hands in front of the wall to shape the window to the size you want.

^{vi} Email gradually disappeared in usage in the early 2010's as the world moved toward video messaging. The result is that rather than 'calling' people you would 'view' them, as everyone is connected visually through video networking. Equally, you no longer post cards but view them, so you send viewcards. The

term 'viewing' first appeared in Isaac Asimov's 1957 novel *The Naked Sun*, where people met through video networks rather than in person.

^{vii} Some believe the end of the keyboard and typing is extreme, but if you think of the keyboard in context, it is not a natural interface at all. Just one we have learned to adapt to use. For example, we all type today because we have to. You cannot live in today's digital world without being able to press the QWERTY keyboard. As long ago as 1990 however, most financial institutions had typing pools and most managers had secretaries. The typists and secretaries were there to press the QWERTY keyboard, not the professionals. Even in 1995, most bank CEO's would be PC non-literate and would delegate such activities to their assistants. Ten years later, the world is a different place. Most bank CEO's could not survive without their Blackberry. Bank professionals at all levels rely on their laptops and PCs, and all of these are driven by keyboards. To Instant Message, Email or Text, you have to be keyboard-literate. This is just a temporary phase though as, since the inception of the computer era, the technology vision has been to create a virtual world that is as easy to live in as our physical world. In the 1930s, telephone firms were already experimenting with video telephony. Today, the world of video telephony has arrived. Equally, since the creation of typewriters, telex and fax, firms have tried to evolve to simple touch and point voice activated systems. Using simple point and touch systems today are mouse-based, but there are already experiments with haptic technologies, where the user wears gloves to interact with the system. A little like the way Tom Cruise moves information around in the film *Minority Report* using a pair of light emitting sensor gloves, these interfaces are in early experimentation today, but will gradually become more predominant. Combining such interface with voice commands and voice recognition will mean a movement away from typing. The result is that the keyboard will become more and more redundant as point and talk systems take over, driven by haptic technologies and reliable voice recognition.

^{viii} After MiFID and RegNMS, Over-the-Counter (OTC) trading firms underwent extensive business process redesign to deliver best execution compliance. The result was a radical shake-up of most firms as buy-side to sell-side networking, linkage and operations all changed and TCA (Trade Cost Analysis) became the order of the day. In particular, sell-side charging was laid bare by these regulatory changes, and buy-side firms began to challenge charges for historically bundled services for connectivity, execution, research and commissions. The end result is that buy-side firms circumvented sell-side firms for many of these capabilities where they thought they could deliver more cost-efficiently or effectively. Soon, buy-side and sell-side and exchanges were all thrown into a competitive melting pot, with large brokers competing with traditional exchanges to gain institutional investors liquidity. On the other hand, institutional investors were soon becoming technology powerhouses themselves and realised that they no longer needed to deal through accredited brokers on traditional exchanges – the old way of doing business – but just needed to have network connectivity to as many venues as possible. The outcome was that buy-side firms effectively became both trader and dealer houses, with the ability to order route directly to wherever they wanted to invest. This forced the large brokerage houses to reconsider their role and, as market-makers, they began to offer competitive fulfilment services to the traditional exchanges. In other words, there was no buy- and sell-side ... just investors and execution venues.

^{ix} This is what best execution is all about, and was the result of RegNMS and MiFID with no-one considering their execution or execution venue requirements, but focusing on their investment and investment fulfilment requirements instead.

^x Viewcalls are conference calls over the net and are based upon the currently dedicated services such as *TelePresence* by Cisco or *Halo* by HP. These products use ultra high definition 1080p video combined with end-to-end latency and wideband spatial audio. The result is an HDTV conferencing service that allows you to **feel** you are actually there in the room with the other callers. An example is provided below:

