Chapter 1

She introduced herself as Maruška, from Prague. "Just call me Marie" she laughed.

It was in the bar at the Eilat Sunset, a renowned fish restaurant. Paul had come down from Tel Aviv for a week's break from his research. He was in the final year of a mathematics doctorate, researching large prime numbers and their application to advanced encryption technology. He was currently working on a particularly abstruse area relating to reverse factorisation of prime number products and needed to get away and clear his head.

Since just after the Six Days War in 1967, his parents had kept an apartment here and he had holidayed here all his life. He planned to use the family's rigid inflatable boat to do some diving and photography, probably with one of his buddies from the diving school. He also planned to supplement his pocket money, as he did every time a new version of his encryption algorithm was finalised. This would be the final sale now, as he was near to completing his project, and would be heavily engaged in writing his paper for the next year or so. He also felt that what had started out as a bit of fun was now becoming a worry. But, for a research student and extra $20,000 a year was not to be sneered at.

She was his age, maybe a year older. Although twenty eight years old, Paul looked older, having lost a lot of his hair. He did not consider himself particularly successful with women. Marie was stylish and intriguing.

"So", he said, "what brings you to Eilat?"

"A short diving holiday", Marie replied. " I learned to dive in the Adriatic when I was student in Trieste".

It became clear that Marie was an experienced diver and knowledgeable about reef fish. The best reefs were not accessible from Eilat as they were in Egyptian waters. Marie had dived the Egyptian coast – the reefs of Sharm el Sheikh in particular – which Paul always longed to visit, but travelling and diving there was impossible for an Israeli citizen in the current political climate.

After a few sundowners, they agreed to have dinner together and shared a superb grouper cooked with lime. They rounded off the evening with a couple of brandies and agreed to dive together the following day.

At 10 am the next morning they met at the diving school where Paul arranged to borrow gear for Marie. They loaded the Zodiac RIB and headed out. Although anchorages were restricted in reef areas, Paul knew the area very well and selected a spot which he knew was particularly good for Moray eels. They were one of his favourite photographic subjects, and enjoyed being fed by hand. He had dived here so often now that he knew some of the eels individually and had pet names for them, but Moray eels were short-sighted, they didn't recognised him.

The diving was superb, the lunch better and they were getting on like a house on fire. They headed back to Eilat and Marie suggested that they go back to his apartment to round the day off in style.

"Shit, I have a meeting arranged" Paul said to Marie, kicking himself silently, "but how about dinner again this evening, and we'll take it from there?"

"I look forward to it – how about 7 o'clock at the Eilat Sunset again ?", Marie responded.

"Great, I'll see you in the bar", said Paul.

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The meeting in the café was brief. Paul handed over the CD case in an envelope, and received an envelope in return. Eli, as he knew him, shook his hand.

Paul had first been approached in the students' union coffee bar in Tel Aviv two years before. At that time he was still working on 'hard' encryption, but using fast Fourier transforms to apply it real-time to speech.

Eli had introduced himself and over a few months a friendship had developed. Eli was reading Philosophy, but finding it did not excite him and he was considering dropping out and going into business. They had shared, beers, holidays and occasionally even girlfriends. One day, Eli said that he had heard that Paul was working on some really interesting maths. Public Key Encryption Technology was not secret – it was after all a mathematical technique based on very large prime numbers.

There were practical limitations however. These arose from the sheer amount of computing power required to apply these techniques in real time. The application of the techniques could be sensitive, secret even, but at that time Paul's work was borderline. It was however commercially valuable.

A couple of months later over a beer, Eli had casually said that he had a friend who might be interested in buying a copy of Paul's encryption algorithm. That was when it had started. Paul now had almost $60,000 in currency squirreled away and had been considering buying his own place in Eilat. However, not knowing what he planned to do after his doctorate finished, he had held back from a property purchase.

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The friendship had gradually changed into more of a business relationship and now Paul was no longer really sure who Eli was. Over the last few months , he had begun to feel pressured to get his software releases delivered to Eli.

He returned to the apartment, put the money in the safe and then showered, shaved and changed. He got to the restaurant just in time for the sunset. The wind had been slowly building through the day, and the sunset was spectacularly enhanced by sandstorms over the Sinai to the West.

He was really enjoying Marie's company, the conversation was scintillating. She had taken a degree in Modern European languages in Trieste. Europe was largely unknown to Paul except for a couple of visits to see family in London. He sat captivated as she described her memories of Amsterdam, Paris, Prague, Berlin and London.

After dinner, Marie said "Let's dance!"

The last time he could remember dancing was at his brother's *bar mitzvah* eleven or twelve years earlier. He couldn't dance but it didn't matter. They kissed on the dance floor, they held hands as they walked towards his apartment. He was blind to everything, walking on air, laughing, joking, intoxicated with her. They passed a grocery shop and the smell of coffee and spices were overpowering. It was overwhelming, as if he had never used his senses before that moment. They turned a

corner, and he turned her, pushed her gently against the wall, pushed his hips against hers, his chest against her yielding breasts, his mouth against hers and she returned the pressure, insistently but gently. Their kissing was urgent, their touching electric. He buried his head in her hair, kissed her neck, grasped her by the waist and pulled her harder against him, grasped her buttocks and pulled her tightly against him. She moved her hand between their thighs and rubbed him, groaning as he kissed her throat. Then, the sound of a car horn on the main street brought him to his senses. This behaviour was not really appropriate for a public place in Israel he told himself, sadly. "We're nearly there" he whispered to her, taking her hand and leading her. They took the lift and as they did so they started again and repeated the street scene. Then, the lift was on its way down again, and stopped on the third floor. A middle aged couple with a poodle stepped in and travelled to the ground floor, whilst Paul and Marie composed themselves, giggling, as the lift started its upward journey again.

"That was Mr and Mrs Landy" Paul said, "Mrs Landy will be telling my mother about us kissing in the lift". Marie laughed.

They didn't make it to the bedroom. He was not very experienced, but improved as the night exhausted them.

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He woke at about 9am, and they shared fresh apricots and bread for breakfast. Marie said she had to go back to her hotel to change her clothes. They kissed and she headed off after agreeing to meet later – she was keen to go diving again.

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They picked up the diving gear at midday at the dive school, collected some chilled white wine and some lunch from the deli, and headed out in the rigid inflatable boat. Marie suggested that they go to a quiet reef anchorage which she had heard about. Paul said that he did not think it was very quiet, but he would head there. Once outside the marina, he opened the RIB up to 30 knots, and they laughed as they felt the wind in their hair and bounced and splashed through the wake of a tourist boat. There

was only one other dive boat there when they arrived, a large unmarked black RIB, and the divers were just submerging. They dropped the anchor in 10 metres of depth, as far from the other boat as they could get within the permitted area. Paul inserted a fresh memory chip into his digital camera, checked the batteries and sealed the enclosure. They suited up, and checked each other's gear. Masks on, laughing, and a backward flop over the side of the RIB. Only 10m deep, close in to the shore, this was reef walking area. Paul beckoned and they headed towards a rise in the sea floor and a series of natural steps in the reef as it ascended towards the sandstone cliff of the shore. Marie beckoned to Paul to stop and motioned for him to take a picture of her. She stepped backwards a few paces, and Paul raised the camera.

Both of Paul's arms were harshly grasped from behind and he was hauled, struggling towards Marie and the ascending cliff. He looked around, confused, frightened, uncomprehending . There was a diver on each side of him holding him, pulling him. He panicked, struggled, kicked with his flippers, remembered flashbacks to last night with Marie, talking about his work, the CD, his pocket money, Eli. Marie swam to the side and retrieved the slowly falling camera as they reached the stepped edged where the reef began its ascent. One of the divers reached out and started to vent Paul's tanks. He struggled violently, kicked, completed the jigsaw of his time with Marie, tremored, and was then, finally, still. They wedged his right foot securely in a crevice. Finally, they vented his pony tank. The three of them swam gently away in the direction of the black RIB. They found the anchor line and ascended it. There was another RIB entering the anchorage. Marie rolled in over the side after the men, and lay on the bottom of the RIB. The men started the engine, hauled the anchor, waved casually to the new arrivals, and headed south at 40 knots.

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The starter feedstock was packed in two litre stainless steel thermos flasks, twenty of them, at a temperature of 4 degrees Celsius. These were packed in polystyrene beads within a pine box, the lid was nailed down and the box was quickly stencilled in black paint "WATER MAKER SPARES" along with some spurious part

numbers. Easy enough for one man to carry and load into the back of the Vauxhall Corsa utility van used by BioPro for local errands.

Dai Onions, as he was known in his village for his champion onions, climbed into the van. He threw the envelope of Customs papers onto the passenger seat, started the engine and took a left turn out of the industrial estate on to the A48 road to Milford Haven. This Friday was going to be easy - a run down to Milford Haven and a short wait for customs clearance. Then on down the old Esso terminal to the pierhead to drop the crate off at *Universal Trader*.

Passing through the outskirts of Haverfordwest, he took the turn for Milford Haven at Merlin's Bridge, oblivious to the white Ford transit van which was closing up behind. He did however see the flat bed lorry stop ahead of him – he hit the brakes hard, swearing.

Then, a severe crashing contact at the back of the Corsa van, generating a wobble which amplified into a swerve as Dai tried to correct it and then a spinning skid off the road. The lorry accelerated away, followed by the Transit van.

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It did not enter the traffic sergeant's head that this was anything other than an accident, with no apparent witnesses. The small van had demolished the bridge parapet as it shouldered its way through at 55 mph and somersaulted to the copse below. There were wooden crates scattered around the wreckage. The policeman was unaware that one box was one missing. Over the next few days, this fact became apparent to two people at BioPro, and would remain unreported, at least as far as the police were concerned. They found Dai at the foot of a tree in the copse. His neck was broken.

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In a country house on an estate outside Winchester, the matter of the missing case caused consternation. The starter feedstock could be replaced – it would take six weeks to cultivate. A simple calculation indicated that the delay would cost at

least fifteen million dollars. Of more concern was the fact that the degree of success of the operation depended on timing.

Of course, the fact that the existence of the case was known to a hostile third party was a matter that would have to be addressed vigorously.

Charles Tobin prepared his e-mail, loaded it onto a memory stick then drove his Bentley into Southampton, parked it and then walked to a Starbucks in St Mary's Street. The e-mail found its way to the server in Chechnya in 3 minutes. It was sent from a one-time e-mail address, to another one-time e-mail address. It was sent at 5 pm UK time, when web traffic was at a peak worldwide.

Copies and trace files eventually found their way in to GCHQ in Cheltenham, Langley in Virginia and into a little known building complex in Nizhni Novgorod, the city formerly known as Gorki on the River Volga. Bots were automatically enabled, tracing their way up the chain from computer server to computer server, following the address trail. In the few minutes they took to locate the source server, all traces had disappeared. The IP addresses of the source PCs would be recoverable from the ISP – standard practice these days, put in place putatively to prevent and track child pornography – but the real reason was national security. The internet had streamlined, automated and facilitated terrorism, money laundering and general high level banking fraud. Governments were fighting back.

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Tobin's e-mail joined the backlog of thirty five other encrypted files that had built up over the last few months in various Government computer directories around the world, as well as in three or four private systems. None of them had been decrypted yet, despite the concerted efforts of the watchers, and despite their disparate hardware, software and analysis techniques. The encryption was very high strength and was causing concern at the highest levels.

Outside of governments, there had been five known users of this software in the world. Four of them were alive, and the fifth, an Israeili research student, had died three months earlier in a mysterious scuba accident whilst photographing fish. Apparently, his leg had got jammed in rock crevice ten metres down. No trace had been found of his diving buddy, a blonde woman with a central European accent, nor was there any trace of the camera which he always took with him when diving.

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The UK, US and Russian government investigations were more or less all at the same stage, although there was no acknowledgement at all between them that any investigations were actually under way. Independently, they knew that the there were three geographical foci of the e-mail traffic – one in the south of England, one somewhere in Chechnya, and one somewhere in China. Whilst the work to decode the traffic continued, generally using the sledghammer approach of teraflops of computing power, each of the countries had its own unique approaches to solving the problem.

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The US Government via the Defence Intelligence Agency, had required that SysWall - a world leading provider of virus protection software - include a piece of code in its software releases. SysWall did not know what the function of this code was, but it went out with their weekly "new virus" file updates.

Kalman Belsky, the 32 year old founder and now billionaire owner of SysWall, had been persuaded to co-operate during a meeting at the SEC in New York. The meeting room had been emptied, and an unidentified, undistinguished and very ordinary-looking, man had entered. Belsky agreed to ask his attorney to leave the room. After a brief discussion, and a considerable increase in his heart rate and blood pressure, Belsky signed a document. A memory stick was then handed to him. When he emerged from the meeting, he did not explain the details of the meeting to his attorney. His Limo took him straight to La Guardia airport. His Gulfstream jet flew him straight back to his headquarters in Denver, Colorado.

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There was much hostile coverage in the press two weeks later when the US Stock Exchange Commission announced that they had concluded that there was no case to answer in respect of the insider trading of which a certain Kalman Belsky, President of SysWall Inc., had been accused. It was generally concluded to be "another lucky stroke for a clever entrepreneur" as the cover of Forbes magazine recorded.

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In those two weeks the software patch on the memory stick had ultimately been downloaded and installed in more than seven million PCs worldwide, and in many of the high grade server firewalls which protected commercial websites. The computing world recognized that it was necessary to defend against the dangerous new virus which SysWall had detected and provided protection against. Competitors of SysWall took some time to analyse the virus and issue their own protection updates. Belsky's shareholding value increased significantly over the next few months, as the market recognized that SysWall appeared to be able to respond much more quickly to virus threats than could its competition, and SysWall sales increased markedly. Unusually, it proved impossible to track down the geographical source of the virus, and the CIA did not even bother to try.

From now on, every time one of the e-mails with this specific encryption signature passed from or through a server with SysWall AV software installed, then a simple encoded e-mail would automatically be despatched and would travel through a server cluster in Washington D.C. It would be switched straight through to a dedicated, automatic tracing system. Simultaneously, this system notified a team of two "researchers", buried away in a basement office in Langley, Virginia of the receipt.

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In England, GCHQ was pursuing a different track. The focus was on identifying where in the south of England this originated, and the who and why behind the traffic.

Collection of incoming e-mails took place from random internet cafés, and the e-mail addresses were one-offs.

This suggested the use of asymmetric encryption – that is, there was a list of agreed e-mail addresses, and the one to use for a given day or time was specified in the encrypted message, along with a so-called session key. The session key is the traditional "symmetric" key, used only for a short time and between only two parties, analogous to the one time pads used by generations of intelligence agents. This

apparent pattern was causing concern at SIS in Vauxhall in London. It suggested a degree of sophistication typical of a sovereign state, but current intelligence gave no reason to suppose that any sovereign government was currently able to usefully deploy this level of hard technology. The focus in the UK was therefore on high levels of basic intelligence gathering relating to the top five prioritised threats against the country.

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The supertanker *Universal Trader* left the terminal in Milford Haven shortly before high water on the Sunday evening. She moved down to Dale Roads to anchor, informing the harbour master – Milford Haven Conservancy Board – of a change of owner's orders. Six weeks later, she returned briefly to the terminal for two tides and took on her cargo, along with the new feeder stock. She headed south for the traffic separation scheme to the west of the Scilly Isles, and ultimately southward for the Cape of Good Hope.

End