

# Tea and I: an Allergy

## A Fable

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### ADVERTISEMENT

Wherein the Reader is reassured that  
That which *must* be Trusted had best be Trustworthy.

### CHAPTER THE FIRST

*Wherein is specified a Trusted Tower of Connectivity.*

**Once upon a time**, not so long ago, a Kingdom found that its communications needs outstripped its understanding of Natural Philosophy and of the *Ars Mathematicæ*. As in many Lands, the Rulers and Nobles had need to keep some Things as Secrets from the Rulers of other Domains. In addition, there were sometimes Intrigues whose very details needed to be kept from all but a very few Close Collaborators within the Nobility itself. Few within the Kingdom were Literate, and the most private of Communications were exchanged in writing in order to preclude their being Overheard or Understood by Commoners. The Kingdom's few most Trustworthy Scribes were trained by the Reclusive Priestess Anne Essay, who had the Means to write in many Formes that none but the Very Learned could read or understand. The Nobility employed the Priestess' best Scribes to Pen their Most Private Intrigues.

It soon came to pass that Anne Essay became *the* authority on Secret Writing, and a Law was enacted forbidding the use of any but her Scribes for this purpose.<sup>1</sup> As her Powers grew, some suggested that she give Advice and Guidance to Novitiates who needed to engage in Private Intercourse. As is the wont of the Priesthood, Anne Essay distributed a Vermillion Pamphlet wherein was writ the following Mysterious Incantation:

«Numerous single-level Hosts (at several Levels) are intercon-

nected via a multilevel Packet Switch, which emulates multiple point-to-point Networks between Communities of Hosts of the same Level. Communications between Host and Packet Switch are in the clear the Sensitivity Level of each Host is determined at the switch by internally labeling the hard-wired Communication Ports. The communication Channel must be secure (separation of Data of different Levels must be maintained), but it need be neither reliable nor noise-free (from the point of view of Security).

«Two quite different Approaches might be regarded as suitable for the evaluation of this Architecture. In the First, (and most natural), the Architecture would be reformulated to show the Packet Switch as a Network Component, connected to each Host with a single-level Channel. Network documentation would then indicate that each of the new Channels be constrained to be located within an appropriate Security Perimeter (so that physical Security is maintained), and that no «security-critical Information requiring either Reliability or Fidelity is transmitted over them. The Second assertion would be verified during Evaluation, and the First during Accreditation.

«A Second (radical) approach would be to insist that the Packet Switch is part of the communication Channel. In this case, it is difficult to see how the required Security-Compliance is to be attained while encompassing the Packet Switch within the Evaluation, as end-to-end techniques are not in use, and it is obvious that sensitive Information is being transmitted.... In effect, such a Strategy when applied to the System described is a Decision to use the techniques described in Appendix C (the System actually evaluated is an uninteresting Subset of the originally envisioned System)»

Such Formulæ were neither Lucid, nor Intelligible, nor Illuminating to members of the Laity. Some observed that the lack of Clarity was part of Anne Essay's strategy to prevent her Knowledge and Techniques from being spread to Outsiders. Few were able to find Solace in the definitions of 'Host', 'Channel', or 'Security Perimeter'.

The High Priest Pigalle gave Special Instruction in the Divine Technique at the Place d'Armes. According to Pigalle, the meaning of the Mysterious Incantation was that Chambers wherein State Secrets were conjured and employed might communicate the One with the Other only by the intercession of carefully selected, but humble, Esnes who transported messages through the darkness of a Tower

<sup>1</sup> Some came to suspect that the Reclusive Priestess could read Secret Writings, even if they were torn to Shreds once Read. She retorted somewhat cryptically to her principal accuser, the late David of the Château d'Iffy, "Gentlemen do not read other gentlemen's mail." His last recorded Public utterance, "Madame, you are no Gentleman," is recorded at the country estate in the county of the White Fields.

of Connectivity.<sup>2</sup> For each degree of secrecy decreed by the Lord High Sheriff, should the DARK LADY make Available the use of a separate and unique Floor guarded within the confines of the Tower of Connectivity. Each Floor was to be decorated in its Own Particular Colour, and thus also coloured the livery of all who served thereon. To each Sensitive Communication was to be attached a Riband of the single Colour assigned unto its Degree of Sensitivity, this Colour being that of the Floor on which the Sensitive Communication was composed.

Each Scribe and Courier at the Tower was to be Confined to Habituate but a single Floor. Guards would be posted at the passageways to the Floors to vouch for the propriety of all Persons and Secret Writings that entered therein: although the guards could not read the Secret Writings, they could easily verify the garb of anyone seeking to enter. An improperly-clad Esne caught by the Guards was doomed to perish in the dread Dungeon of Bits, where also were sent into Disintegral Matter any Secret Writings bearing the wrong coloured band.

Other Scribes and Couriers were allocated to Chambers of Secrets throughout the Kingdom, but never were more than two Scribes to be taught in the same Forme of Writing. Each Forme must be Unique unto communications of a Single Colour. Thus, a Secret conjured in one Chamber would be inscribed in Forme I. The only Scribe outside the Chamber who could read Forme I was to be confined to the appropriate Floor of the Tower of Connectivity. At the Tower of Connectivity, a Secret would be transcribed into another Forme assigned to the level, say Forme II, and forwarded to the Scribe for Forme II at its ultimate destination.

## CHAPTER THE SECOND

*Wherein the design of the Tower [verily a Switchery of Pacquets] Seemeth to Comply with the Ordained Policy whilst important Services will be Denied by Cause of the exercise of License by Implementors. The King learneth, somewhat Unpleasantly, the Utility and Value of Unambiguous Labels.*

The King was very pleased with the Tower but, being that the King was occupied with substantial Affairs of State, he had neither Desire nor Knowledge to adjudge its Fullest Suitability. In the Kingdom there were two brothers, Cyclopes as it were, who were known by all to be extremely good at analysing all Manner of Thing. The first of these brothers was known by the name "Observe Singularly" and the second, who was even more discerning

than the first, was named "Encore-Une-Foys."<sup>3</sup>

The King asked the second brother to Ponder the plans for the Tower. This brother was known for the novel and thorough scrutiny that graced his efforts. One time sent he a herd of Oxen to charge a building for to determine if its Bulwarks could be breached; another time, for an aqueduct, measured he the volume of Waters going in and that coming out to reckon the rate at which water was lost through all the minor cracks for which the Bunging was impossible. For the Tower, the brother applied all his ken to divining the plans for the project. He called in a Wandering Gypsy, yclept Tchai Na Chô, who filled practically all the Parchment available in the Kingdom with cryptic marks in some arcane language, ere pronouncing the design Sound.<sup>4</sup> After study for many sleepless nights, the brother pronounced the Plan as close to Perfect as mere Mortals could hope to achieve, remarking that its Dye-Craft was in a wonderful class, indeed. The King was immensely pleased and Honoured the Achievement with a Legendary Fête.<sup>5</sup>

When the Tower was built and first used, the Floors and Scribes were not associated by Colour as was Decreed. A Witty Craftsman decided unto Himself that an Economie could be made whereby the Floors would be numbered, and each Scribe would announce his<sup>6</sup> proper Floor to the guard. The Scribes were, without exception, as honest as the Day is long, so this mechanism seemed fit and proper.

One day a Scribe had taken too much wine at lunch and came back to the Tower in a State of Merriment<sup>7</sup>. The Scribe decided to enter the Tower by walking upon his hands. When he announced his Floor to the Guard, he said truthfully that he worked on Floor IX. Since the Scribe was topside down, however, his words were misunderstood by the Guard who opened the door to Floor XI, instead. Nobody inside noticed the flaw.

As luck would have it, that very same day the good Queen Glacée heard that the High Priest Pigalle did offer Special Instruction in the Divine Technique. The Queen, ever desirous of Knowledge, did dispatch to the High Priest a command to "Come this very eve within my private chamber and do give forth intensive instruction in the Divine Technique." The Queen's personal Scribe did dispatch the message to the High Priest's scribe by way of the new Tower. The missive was delivered to level XI as

<sup>3</sup> Children had trouble pronouncing these long words, and so the brothers soon became known informally by their nicknames, "See One" and "See One, Too".

<sup>4</sup> Other Gypsies were later to ask that the personal intercession of Tchai Na Chô be thenceforth referenced *sotto voce* for to preserve their personal Reputations.

<sup>5</sup> Alas, others of the Fates were to make themselves known to all.

<sup>6</sup> This being before the days of certain Actes designed to insure fullest opportunities to the fairer Sex, all Scribes were of the male persuasion. Later were devised certain tests to determine how persuaded were these males of their persuasion before being admitted to certain floors, but that is a separate story altogether.

<sup>7</sup> Which was most unfortunate, since the Tower stood in another State entirely.

<sup>2</sup> The Tower of Connectivity was ruled by the Venerated Widow of the King's Uncle, who had Reigned for three Scoote years and seven over the Kingdom of Constant-Bliss. The Domaine's Nobility willingly vested their Trust in the Good Anne de C-B, as was she yclept by her Intimate Stalwarts. To others was she known only as the DARK LADY. She sat upon a three-legged throne which had a peculiar tendency to slant in one direction, owing to the fact that one of the legs was much longer than the other two. Her sceptre was surmounted by the famed jewel, the Star of Security.

dictated by the Royal policy.

That same day, did the Reclusive Priestess send to the King an invitation to a private Service in his honor within her Sanctuary. The King delightedly accepted the invitation of the Priestess, as Anne Essay was high in the Royal favour.

The besotted Scribe was one assigned to the correspondence of the King. As the Fates would have it, he had taken his ease in the place normally allotted to a temporarily indisposed Scribe of the High Priest's Domain. Alas, as dictated by Policy, the besotted Scribe did dispatch the fateful message to the King. Now, the King had been out of favour with the Queen due to a religious difference. He was, in consequence, much surprised by her flattering invitation. Much as he desired to attend Anne Essay's Service, he dared not disappoint the Queen.

Needless to say, the Queen did not welcome the King into her chamber. When he produced her invitation, she did speak evil of his command of the Divine Technique and bid him leave her presence at once. The King was not only humiliated before the Queen, but was denied the service of the High Priestess.

The King was Greatly Disturbed by this incident and ordered a Full Investigation of the Building of the Tower and of its Operation. The one-eyed brother and the Gypsy were recalled to make full explanation of how such a problem could have occurred. After much study, they announced to the King that the Floors of the Tower had been described in the Plans as "to be Identifiable by a Childe of Three." The Gypsy explained that her work was directed at analyzing the Plans, yet none had thought to apply her wondrous techniques to the Building and Operation of the Tower itself. Clearly, children of such an age could not be expected to fully appreciate Numbers, she said, and thus the Tower had not been built according to its Specifications. Although she earnestly disavowed any Responsibility<sup>8</sup> for the Calamity, her method was branded as witchcraft and was henceforth distrusted throughout the land.

Finally, a Conservative Soul suggested using Colours in Accord with the Royal Decree and thereby to distinguish without Ambiguity the Floors and Scribes, and all were again contented. The Tower was used often for the communication of Secret Writings, and those who used it were Well Satisfied with the way in which it separated all the Secrets from Each Other.

### CHAPTER THE THIRD

#### *Wherein a virulent Curse plagueth the Tower.*

The Tower of Connectivity was in every way worthy of its high level of trust. All throughout the land the People had Great Assurance that Secrets received from the Tower were both perfectly Private and absolutely Unvio-

lated. If a Sensitive Communication's Riband were switched to one of the wrong colour, the Message would not be delivered to a Scribe who could read it. And a Scribe would surely know by the Forme of the Writing if any Secret were Perversely Altered.

One day, however, the Guards became possessed, as if a Dæmonic Spell had been cast upon them in the Night. The Guards complained of Fevers, Chills, and Great Disturbance in their Bowels. Since the Guards slept in a common barracks, first one Guard, then the next, and finally all Guards became afflicted with the same Ill. All, that is, except one named Roderick who spent his off-duty hours with a certain attractive Wench who served as Scullery Maiden in the King's own Household. Each Guard, in turn, dismissed the ailment as a minor affliction that did, indeed, Pass ere the Orb of Helios had flown on its Chariot through the Darkness and return'd to the Dawn. It seemed as if no trace of the ailment remained. Time passed, and All forgot about the Mysterious Distress.

Later, though this point can be reconstructed only through exhaustive analysis of the Daily Record of Persons Coming and Going through the Floors of the Tower, Scribes were ushered by the Guards to the *wrong floors*! Since the Guards were absolutely Beyond Reproach in their Proper Fulfillment of their Duties, one can only conclude that the Guards began to err. First an Orange Scribe was placed on the Chartreuse Floor. Then a Violet Scribe went to the Mauve Floor, and soon, it seems, the Floors were all impossibly jumbled. The Scribes were overworked, and so they failed to notice that they clashed with their surroundings. It truly seemed as if the Guards had been cursed with Colour-blindness.

Except Roderick.

Roderick, who usually Guarded the Silver Salon, would come in every morning to find Scribes of every Colour in his Salon. He would storm through the room, ejecting Scribes right and left, until All was again restored to Propriety. Then guarded he the door, all day rejecting Pinks and Purples that were directed to him, and sending them on to their proper rooms. When he left his post every night, his room would be in proper order, but when he returned in the morning he would again find Scribes of all imaginable Colours in the room. When he was required to guard another room (and take the Place of a fellow who was ailing), found he there as well the self-same Chaos.

This time did the Calamity reveal itself unto the King in a distressing manner, indeed. It seems that a storm was a-brewing on the horizon, and the Royal Seers, having examined the entrails of birds and such other Signs and Omens as are necessary to make sound judgments, determined that it would be best to have the King and his Noble Court return indoors from their respective hunts, games, and affairs in the out-of-doors.

Thus were prepared many Messages bearing the words "Seek Shelter Immediately," and these Messages were transferred to the Tower for urgent communication to their recipients. Unfortunately, the message for the Duc de Maurice was sent to the Azure room, as that was the room from whence his communications were transformed into Secret Writings. But in the Azure room was a Fuschia

<sup>8</sup> In this she followed the precepts laid down by Statistics for our Guidance, as enunciated in *The Imp*, to wit: "I could deny it if I liked. I could deny anything if I liked." Alas, blue china notwithstanding, she was unable to live up to her bold Position and it was all for naught.

Scribe who duly transcribed the message into the only Forme of Secret Writing he did wot. Likewise, the message for the Marquis of Somewhere was transformed by a Peach-clad Scribe, instead of one dressed in Forest Green, as would have been proper. Only the message for the Court Jester, which was transformed in the Silver Salon, was prepared in a Suitable Manner.

The messages thus transformed were dispatched immediately to their intended recipients. However, when each received the message and had a loyal Scribe ply his craft on it, try though he might, the Scribe could not make sense of the message, reading it forward, backward, or downside-up. Thus did the Nobles stay out-of-doors and thus did all become thoroughly wet, through and through.

Upon seeing the Nobles come tramping one-by-one into the castle, looking as if they were drownèd cats, did the King express amazement. "Received you not my Urgent Message?" asked the King of each. The Nobles replied, with as much consternation as one can show toward a King, that in Sooth had they received each a message, but it was conjur'd in such Forme as to be intelligible to No Man.

The King was Greatly Vexed. He went for a personal tour of the Tower and found each room in total Kaleidoscopic disarray, save the room of Roderick. After dispatching each Guard (except Roderick) for to be Drawn and Quartered,<sup>9</sup> the Head to be displayed upon a Pike for a week, and the Hands to be severed from their Corpus and cast into the Pool of Cess, the King praised Roderick highly, and requested him to choose new, trustworthy and unbesmirched youths to become Tower Guards, with Roderick himself the Commander of the Guard.

#### CHAPTER THE FOURTH

*Wherein is it shewn that a Mechanism invented by Kenneth the Imbiber is Inadequate to Forfend certain Aggressions by a Wily Adversary*

[Excised]

[by Decree of the Reclusive Priestess]

#### CHAPTER THE FIFTH

*Wherein Will's Son, a vile Clerk, doth exploit the absence of an enforcèd Integrity policy and employeth a Covert Channel to the detriment of System Integrity and the Security of the Kingdom.*

Now Stege, an Evil Dragon, was a constant source of anxiety for the Kingdom. Stege was said to be capable of scorching the entire Kingdom with his hot breath. And

while Stege had never actually scorched a kingdom, the fact that he had swallowed whole both Kingdoms and Principalities gave the good people of the Kingdom great Palpitation of the Heart.

Sorely was the King distressed. A great knight, Sieur D'Aiye, was charged with protecting the Kingdom from the breath of the Evil Dragon. This bold and clever knight let it be known in the Place d'Armes that a cloud of Magic Arrows would act as a Shield to defend the Kingdom against the Dread Dragon. While some of these Arrows would force the heat of the Dragon's breath to dissipate, others would fain proceed to implant themselves in the side of the Dragon herself, thereby inflicting Great Pain. Thus, the Dragon could be both thwarted and threatened if e'er She attempted to scorch the Kingdom.

Alas, the Arrows were made of the rarest and most costly of Elements,<sup>10</sup> so Stege arrows were available in numbers barely sufficient to withstand the threat. Since the threat of Stege must be met at the borders of the Kingdom, Sieur D'Aiye commanded that an Urgent Communication be sent to all Arrow Depots that They should dispatch the Special Arrows to defensive outposts on the Borders and Coasts of the Kingdom.

Clerks of the Ordnance Bureau in the Place d'Armes were, of course, illiterate. They employed simple marks in inks of different hues on maps of the Kingdom to indicate numbers of different kinds of weaponry to be sent to various sites in the Kingdom. Thus, five Red marks on a map at the location of Arles signified that five bundles of Stege arrows were to be dispatched to Arles. Five orange marks on the same spot signified that five bundles of siege arrows were bound for Arles.

When Stege heard of the work of Sieur D'Aiye, with a purse full of Gold Coins seduced she a Clerk of Low Character who travailed at the Ordnance Bureau in the Place d'Armes. The subverted Clerk was responsible only for carrying the ordnance maps from the Domain of the Ordnance Clerks to the Domain of the Scribes in the same Chamber. However, the Evil Clerk carried with him vials of Ochre and Magenta Ink, secreted upon his person. Whenever he transferred a map to the Domain of the Scribes, he overmarked all Red marks with Ochre and all Orange marks with Magenta.

Thus was it that orders, dispatching Stege arrows to the cities and siege arrows to the outposts, were transmitted from the Ordnance Bureau in the Place d'Armes to all Arrow Depots. Because all orders were received via the trusted Tower of Connectivity, the Arrow Clerks who received orders wrapped in Riband of the appropriate colour and read by the appropriate trusted Scribes obeyed without questioning. So, Stege was free to scorch the outposts, ravage the countryside, and starve the cities into submission. The which, alas, did she.

<sup>9</sup> The official Portraitist being on acrylic sabbatical, a wandering charcoal (neat but not gaudy pinstripe) Caricaturist nicked and dined the Condemned to death.

<sup>10</sup> The famèd french-Welsh Sorcerer, Père apLouis, made the Arrows following teachings apprehended from the Druids of North Amorique.

## MORAL

*Wherein it is revealed that Integrity, absent from the Initial Design of the Tower could never be added to a thus Flawed Foundation -- however strong the Building Blocks.*

A sage of the Kingdom did survive in distant exile. This sage pondered the question, "How is't that despite the workings of Anne Essay and her Cousin Anne de C-B [for so she was!], failed the Tower to prevent the Dread Adversary from employing our own Sensitive Communications against us?" The eye of the sage fell upon its own image reflected in his cup of tea. A gentle motion shifted his focus to the swirling leaves beneath the surface. There a drowned fly drifted among the leaves that gave purpose to his tea. "Could it be that those who analyzed the design of the Tower missed something as obvious as the fly that contaminates this tea? Surely not! The fly was not called for as a part of my cup of tea. It was an unintended intrusion that had missed detection. Whether the fly entered within the cup itself or with the tea, water, or sugar that were added later cannot now be determined; for sooth, the fly may have even fallen into the completed concoction. Little does it matter. The integrity of my tea hath been breached."

And so is it, Gentle Friends, with your Magical Abacus. The enforcement of your Secrecy Policies, yea the correctness of all your functions dependeth upon the enforcement of adequate Integrity Policies. This integrity enforcement must needs be imposed as designs are Conceived, and must it be Maintained throughout the Realization and Employment of the resulting Structure. We feared Disclosure of our Secrets so we concealed them in Arcane Scripts. We did indeed, once our implementation was made to match its specification, prevent the unauthorized reading of our Scripts. But we did twice fail to prevent corrupt forces from writing to our most critical processes. First a Malady did blind our enforcement mechanisms to the true colours of our Trusted Subjects. Then, our enemy did twist our Correspondence to his Evil Purpose. We failed. But what else could we have done?

We knew that all manner of Threats were most common in the Kingdom. Although Subjects were loyal and could be trusted completely, the value of their trustworthiness was limited by that of their intelligence. Stupid but loyal Subjects were no less stupid. Deprived of dependable foundations, they yet unquestioningly followed orders. Durst we blame them for stumbling when the earth beneath their feet lost its integrity?

It is clear that policies necessary to secrecy and policies necessary for integrity both share common features and yet have critical differences. Policies for prevention of unauthorized reading of Secrets are well understood. Policies for prevention of unauthorized inputs to our systems are largely without structure. We learned too late the need to control *all* inputs to critical processes in accordance with a rigorous and formal integrity policy. We learned that verification of specifications against policies is of questionable value unless accompanied by equally rigorous verification of the implementation of

those specifications. Did we, perhaps, delude ourselves into believing that there was extraordinary value in a sequential descent into detail for verification processes? Integrity faults are most easily hidden in the labyrinth of implementation details. It may be that the only verification that really matters is that of the implementation against the policy. If that is beyond our art, then we may delude ourselves that our systems are worthy of trust.

Yet, in the end, our Tower worked! It protected both the content and the integrity of the information given it. This, to our grief. Because it worked, we believed what it gave us. One corrupt functionary in one of the Chambers served by the Tower foiled us all because we believed what the Tower sent us. In time, we might have come to question the wisdom of consigning Stege arrows to the cities, but our Adversary gave us no time. But from this all may be learnt, My Illustrious Lords and Ladies:

*that a Trusted Tower of Connectivity no more protecteth a System from a Tainted Member than doth a Barrel, however Wonderful, protect Good Apples from Bad.*

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