

**Some Novel Fraud Detection Methods.**

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**Novel Method 1 : The Tiger Team Test (TTT)**

In corporate governance, good systems and procedures with excellent controls are easily developed with experience and advice of experts, but when they are actually implemented they do not function as predicted for a multitude of reasons such as changes in environment, unforeseen situations, clarity of understanding at user level and above all the evil designs of potential fraudsters. Thus it is imperative for all those in corporate governance to know whether their objectives of laying down specific guidelines and implementing particular systems are clearly communicated and complied with. In short whether things are happening as desired cannot be known until someone actually walks through the system. The proof of a pudding is in its eating.

TTTs are very effective and yield excellent results in testing the strengths and revealing weaknesses in running systems, if applied in a well planned manner. Take the case of security at airports. Before boarding the aircraft, passengers have to go through security checks such as frisking, searches, baggage identification and many other cumbersome procedures in a certain prescribed manner. In spite of all possible experts' inputs however no security system can be completely safe. In order to track possible vulnerabilities, and to ascertain whether all the procedures prescribed are sufficient to nab and deter potential wrongdoers such as hijackers, such tiger team tests are regularly required to be carried out. The security experts use tiger teams posing as passengers with deliberately concealed weapons or with intentions of trespassing into classified areas, during security checks. If the tiger team passengers get through the security without being caught, it means that the system is still vulnerable and does need considerable strengthening or better implementation. The TTTs reveal which part of the system is vulnerable and facilitate corrective action.

Similar walk through tests, with intentions of breaching the system, must be carried out by auditors and even the management once in a while, to test the robustness of the internal control systems under audit or scrutiny. Such tests can help the auditors to determine whether existing systems are vulnerable in any way/s and identify the weak spots. If there are such weak spots the weakness in the control may be sufficient for the auditor to increase his substantive tests or perhaps even to qualify his audit report if there appears to be a chance of a material misstatement creeping through.

**Case study**

A large trading company in retail trading, having huge retail supermarket and departmental stores in almost every major city, in India, was facing a grim situation. Profits in the last few years had been showing a downward trend and the cash flow was getting more and more sluggish. There was a time when the company, previously reputed for its promptness in vendor payments, used to actually send its vendors their payment cheques by post if they were not physically collected on due dates. The same company was now struggling to pay even three month old bills after several reminders. The CEO was discussing this matter with the finance team and the matter was bewildering. On the one hand most of the retail stores were registering a steady increase in sales, with a few stores in certain metro cities like Mumbai and Bangalore showing even a 50 % increase in the last two years. On the other hand, profits were just not there. The sales did not translate into good net profits. An overall analysis showed that this was because physical inventories were lower than book records in almost all stores. Product sales indicated that sales of the small value items like grains, sweets, soft drinks, toiletries,

housekeeping items was increasing rapidly. However, paradoxically, purchases, of high value items, were increasing without corresponding collections, thereby suffocating the cash flow of the company. The increase of low value items' sales was understandable and expected, because the company had gone in for aggressively low prices to attract the small middle class customer. However, inventory reports indicated that the costlier items which were beyond a small middle class customer, such as mobile phones, high value perfumes, electronic items, jewellery, garments, suits, even furniture items like lamps, wall fittings were moving out even more quickly than the small value items. In contrast, inexplicably, the sales reports at almost all retail stores disclosed moderate sales in such high value items. The findings of the finance team clearly pointed out that the sales reports did not agree with the inventory reports. Thus the problem was pretty well identified: Somehow the large value items were being smuggled out without being billed. Since the company had to make payments for these large value items, naturally the cash flow and profits were adversely affected.

**Management appoints a chartered accountant to carry out an operations audit and conduct a risk evaluation**

The CEO consulted the chartered accountant. The brief given to him was to ascertain the main causative factors leading to the business slump, identify whether there were any leakages connected with the anomalous behavior of high value items' movements, and if so, what were the appropriate remedial measures required to be taken.

Accordingly the chartered accountant started by studying the sales and inventory system. Since the inventory and sales systems were not integrated, the stock and material issues from the main warehouse or from external vendors to the various retail outlets needed to be reconciled with receipts and sales at each of the retail outlets. He noticed that the reconciliations were quite satisfactory and all transfers from the main warehouse to the various stores did not have any serious discrepancies. The volumes were huge, because during the last few years, the company had gone in for an aggressive sales campaign and had introduced plenty of bargains, offers, exchanges and free bonus schemes for strategic reasons. Volumes had therefore shot up enormously each year. However, the existing systems in the retail stores had not been geared up to meet the unprecedented demand of more than 10,000 customers, on an average, each day at almost each store. Consequently the control environment and built in controls and procedures for inventory management and reordering, at the retail stores had wilted under pressure.

Apart from difficulties in handling huge volumes, the existing guidelines were grossly inadequate and unstructured to satisfactorily monitor exchange schemes, festive discounts, coupon sales, turnover discounts, customer promotions and new bargains. This was not a simple task by any means since new schemes and offers were introduced virtually every day. It was therefore clear that high value items issued from the stores' own godown were definitely not monitored and reconciled with sales effected. Since stock transfers from the central warehouse to the stores, with respect to the expensive items, were quantitatively matched and agreed, it was clear that the problem of high value items moving out without being billed stemmed from sales operations at the retail stores. Therefore, the chartered accountant also studied the sales procedure at one of the retail stores. He noted that the point of sale application was an imported software application for super market sales which was well tested and easy to implement by the cashiers at each of the exit points. It was difficult to smuggle out items without being billed. Each cashier had a gun-scanner to scan every item in the shopping basket of a customer which automatically read the price tag on the bar code of each item and added it to the bill value. After receiving the payment from the customer each item was placed in the store's specially designed shopping bag and the customer would be directed straight to the exit gate adjacent to the cash counter. Thus after the sale, it was impossible for the customer to put in any more items that were not invoiced, in the shopping bag.

To test out this procedure thoroughly, he visited the store at different hours and found that this procedure was indeed followed quite well at every cash counter, that, he visited. Even then, somehow the expensive items were actually getting past the cashiers in the retail store. But how?

**Auditor recommends a TTT on counter sales**

Based on his experience, the chartered accountant felt that there were times when a system looked wonderful on paper, but on actual implementation there were plenty of practical issues which brought in vulnerabilities and risks. He felt that the counter sales system was something like that. He decided that a TTT would be ideal in this regard to assess the intrinsic strength of the counter sales billing system at the

stores. A TTT would facilitate proving whether, in reality, any item could go past the cash counter without being billed.

He obtained consent from the management for a TTT to be carried out. The authority was essential to extricate himself from captivity in case he was caught trying out this TTT. Having got the authority he first studied the process of stocking and reordering items in the retail stores. He came to know that the focal point for registering a counter sale was the bar code. Every time an item was received from the main warehouse (or sometimes directly from any supplier), a barcode had to be affixed. A bar code was a computerised code in the form of black bars on a white label, for each item, which was readable only by a computer scanner. The barcode and the unit price was generated on a small label by a printing software used by the store, on continuous label stationery specially printed for the company. This barcode label-cum-price tag was affixed on each item received and displayed at the store. Accordingly customers picked up articles from the shelves and put them in the shopping cart and after finishing their shopping, go to any of the cashiers. The cashier would retrieve each item from the shopping cart, and scan it for registering this bar code. The counter sales software would automatically pick up and register the sales value for that item, and add it to the total sale value. Realising that this label was critical to the entire sales operation, the chartered accountant decided to review the procedure for affixing bar codes. The bar code printer and computer terminal was, in the basement, in a dingy place where stores were received.

While the chartered accountant was being shown the procedure for generating bar code labels, he saw that there was no access security on the computer for this printing process nor was the computer kept under lock and key. It was free for use to anyone anytime. On inquiring about this he was assured that the bar codes were usually printed out by the chief storekeeper, and no one else, but admittedly, there was no specific restriction to anyone else doing so. However the chartered accountant was not convinced. The entire bar code label printing process was loosely administered. Almost anyone in the stores right from the lowest level of the janitor, to the clerical staff, to the senior staff and right upto the manager could access the continuous stationery for these tags and everyone who knew how to use a computer could print out such bar code labels. Furthermore, even the computer logs of dates, time and quantities of labels printed were not preserved anywhere. All the foregoing indicated there was gross indifference, if not intended misuse, in the bar code label printing procedure.

#### **The auditor tries out the TTT**

What were the implications? If there was merely indifference, there was no serious repercussion. However, if there was an evil design, what could go wrong? The logical answer was switching of bar codes between two items. Suppose a barcode label carrying a price of INR 15 for an item such as a toothpaste was swapped with the barcode of an expensive perfume worth INR 3,000? With the existing uncontrolled bar code label printing procedure, it was a cinch to do this. The chartered accountant discussed this with the store manager and others in the retail stores. They expostulated and said that this label printing was done only by a responsible person. Secondly, even granting that such a mix up could take place, it would be easily caught by the cashier at the time of sale while scanning the item, since the bar code on the expensive perfume would register only INR 15 in the sale and he would realise that a perfume could not be worth INR 45. Further the labels were coded so as to be store-specific and time-specific and therefore their use was restricted only to the concerned retail store where they were printed for a particular period. They maintained that any misuse was just not possible.

The chartered accountant did not agree and felt that the looseness in affixing of bar code labels could somehow be the key to the business leakage. However, he pondered over the protests and explanations given by the stores manager. Certainly any cashier would realise that an item worth INR 3000 cannot be palmed off as an item of INR 15. He privately consulted a cashier and made discreet inquiries about his duties and problems. Among the many questions posed he inquired about possibilities of items with bar code labels mixed up. The cashier explained that generally such a big mix up would be caught instantly. However under conditions of duress, or where a cashier was not well trained or new to the system, this would easily escape detection. In particular during rush hours when long queues of impatient customers were breathing down his neck, and where a customer had a large number of items to be scanned, this mix up would be almost impossible to detect. The chartered accountant now got the idea and formulated his TTT. He took several printed labels, with the prior consent of the management, and during rush hours he entered the retail store and quietly changed a few labels. Costly items that he had in his shopping cart now carried bar codes indicating

prices of 10 % of their actual value. He picked up a counter manned by a lady cashier who seemed disinterested in her job and waited till there was a queue and then joined it.

He was a little tense when his turn came but he distracted her by asking her all sorts of questions such as the store's opening time, offer periods, new products, etc. Somehow it seemed an eternity till all the items were scanned and the total bill was churned which he quickly paid and went to the exit and left the store. Back home the chartered accountant counted the total dilution in the bill. He had with him a wide assortment of items which were worth INR 2,75,000 for which he had paid only INR 11,500/-.

However the TTT did not stop here. He had been told that the barcode labels were store specific. Therefore, logically these bar codes should have been rejected at any other store. However, the TTT was successful at another store with the label affixed by the chartered accountant. The chartered accountant then studied the impact of the TTT results. It was possible for every store to print labels of a low value and affix them to high value items and use them anywhere in India, virtually at any time. Since promotional schemes and bargains were being offered all round the year, thronging crowds were common. These crowds provided ideal conditions to camouflage such bar code mix ups.

It was apparent that there was some insider who had realised this weakness in the bar code printing procedure and was using it to exploit the situation. A review of the printers' bills for continuous stationery of labels supplied indicated that ten times more stationery was ordered than what was required. The chartered accountant recommended immediate change of design of the bar code labels, for at least the high value 'A' category items, Printing labels was to be done under supervision from a centralised location with store specific labels. He then asked the management to observe the results after two to three weeks. The results had to be seen to be believed. Sales of small value items dipped by 22%, while sales of expensive items improved by 3%. The real relief was in the cash flow which eased considerably. This was because purchases and payments for the expensive items were now commensurate with sales collections.

**For example, the TTTs revealed that a lot of good stocks were being smuggled out as garbage. As shown in the photographs below, it was found that the security never bothered to check housekeeping services and garbage cans when they were taken out of the mall. The housekeeping staff got more and more confident and eventually brazenly took out valuable items covered by garbage and sold them clandestinely. Price tags were switched to get expensive stocks as low value stocks. Foreign currency was mixed with local currency. Many such findings came to light by applying such TTTs.**

### **Novel Method 2 : Application of Birbal tips, tricks and traps in detecting frauds**

The wisdom and strategy applied by the legendary Birbal can be effective in fraud detection even today. The legendary Birbal could guess what the thief had in mind and plan a situation so as to trap him. One of the most useful anecdote is the one wherein he had to identify the guilty servant from among four, who had stolen the queens jewels. He provided each of the servants with a straw stating that it was a 'magic straw'. They were told that, the next day, the straw in possession of the guilty servant would grow an inch longer. The guilt in the servant who had stolen the jewels made him cut the straw by an inch to avoid getting caught. But that was precisely what gave him away, since his was the only straw which was an inch shorter.

#### **Case Study**

This strategy is perhaps also effective in modern day fraud detection. There was a charitable trust set up for assisting the poor, providing medical relief, and other noble causes. The trust had amassed tremendous goodwill during the last fifty years and therefore attracted substantial donations. It collected large sums, exceeding crores of rupees through cash collection (donation) boxes kept at various public places such as department stores, airports, shops, supermarkets and other locations. Collections were retrieved at least twice a week by sending collection cashiers to the locations and boxes were opened at the trust's office.

The managing trustee had received some disturbing reports. In addition to several anonymous complaints, even the auditors had reported that the collection procedure was weak. Tampering of the boxes and pilferage of some part of the collections was suspected. The managing trustee was referred to a fraud examiner, who studied the trends and the collection system. He came to a conclusion which confirmed the worst fears of the managing trustee. Someone at a very senior level of the management, or, perhaps even one of the main trustees was likely to be involved in a cash collection fraud.

The fraud examiner suggested laying a trap which would at least deter the perpetrator even if it did not reveal his identity. Accordingly, it was announced in the next trustees' meeting, that the fraud examiner would test the collection system. He would arrange to drop, five hundred rupee notes bearing a red cross mark in one corner, in all the cash collection boxes at the various locations during the following week. If the five hundred note was missing in any of the cash collection boxes, then that box would have been tampered with and would automatically identify the cashier involved. The trustees agreed and the fraud examiner was asked to go ahead. A week later, the fraud examiner sent word that the five hundred notes had been dropped in the cash boxes at all locations and the cash boxes could now be opened to determine whether any of them were missing. The fraud examiner was also invited to be present when the cash boxes were opened. Amazingly, of all the cash boxes only one of them had the five hundred rupee note with a red cross in the corner. Did it mean that all the other collection boxes were tampered? 'No' answered the fraud examiner. **In fact the cash box where the five hundred rupee note was found was the one where the pilferage was now confirmed.** He now announced that he had not dropped any five hundred note in any of the boxes. In fact instead of five hundred notes in the cash box, he had actually dropped in each of the cash boxes, **a foreign currency note of 20 GB pounds with a small red dot in one corner.** The only cash box which did not have such 20 pound notes was the one where this five hundred pound note was found. This meant that the collection cashier for that particular cash box had emptied a part of the cash proceeds, retained the 20 pound note and inserted a five hundred rupee note with a red cross on one of its corners to proclaim his innocence. The fingerprints on the five hundred note with the red cross were examined and compared with those of the cashier and the store manager where the box was kept. They matched and the two were turned over to the police for further questioning. The Store manager turned out to be a relative of one of the trustees and an estimated Rs. 2.5 crores in the last four period was removed from such cash boxes. The cashier confessed that the involved trustee had provided him with a duplicate set of keys and with the store manager's help, a part of the box was emptied before it was taken to the trust's office. The instructions given were to cream the large value notes and foreign currencies and leave behind the smaller denominations. Such methods provide not only a trap but also a moral check and can reduce the probability of fraud.

### **Novel Method 3 : The Theory of Inverse Logic**

This is a technique which would be useful to detect some frauds at the early stages. Often, it is not possible to ascertain whether any assertion is reliable for want of information. For example, in an insurance claim, in absence of all supporting records, which may have been destroyed or lost, it may be difficult to accept the claim made by the insured, which could be inflated. In such situations, the theory of inverse logic could prove to be invaluable and very effective. In simple words, if you cannot find out what the truth of the matter is, find out what it cannot be and eliminate all such possibilities. This process of elimination is application of inverse logic which sometimes is the only method left to ascertain the truth or fact in a given case. This principle is wonderfully exemplified by the doctrine of the Neti Neti Vaada spiritually elucidated in our Upanishads. This doctrine explains that the whole world as we see it is an optical illusion, and consequently it is not possible to reach or access the Truth (Parmatman) directly. There is another way to reach it indirectly, by the process of renunciation. By renouncing the world, the body, the mind, the ego and everything in this unreal world, what shall remain is the real truth. This has been explained in the 'Brihadaranyaka Upanishad' by sage Yagnavalkya. In simpler words, in order to achieve salvation or moksha or nirvana, use the process of elimination. Fraud detection is exactly the same thing: a quest for the truth in a given situation. Because of alterations and deceptions, which can be compared with optical illusions in the above theory, it is possible that the truth is distorted, hidden or suppressed. By eliminating what is not true, the investigator will come much closer to the truth. How this can be applied is explained below in a few examples.

Take the case of inventories in an organisation. While the sophisticated software and inventory control systems do provide a high level of comfort in the reliability of the reports generated, there have been cases found where inventories had been conveniently inflated for bankers hypothecation or insurance claims. There is a famous 'Salad Oil Scandal' fraud case which features in practically every audit or fraud related publication. In this case, the intelligent fraudster took loans from several banks against hypothecated salad oil stocks in warehouses to such an absurd extent that, the aggregate quantity of all salad oil stock pledged with the banks exceeded even the stock of salad oil in that whole country. None of the banks had bothered to ascertain whether the total stock so hypothecated was reasonable and acceptable. They failed to recognise the reality and practicality of the situation. In the same manner, the reliability of production figures can be greatly enhanced by ensuring that they are within the installed capacities. Production can never be greater than the machine capacities. Similarly sales or closing stocks cannot be greater than produced or manufactured quantities plus opening and bought quantities. The auditor must seek to identify and provide for all such absurdities, impossibilities or improbabilities. In a situation of disorder, chaos and disaster such healthy checks and balances must be constantly applied to ensure a smooth recovery till proper systems are redesigned and implemented.

In another case a steamer agent's fraud of raising fictitious bills Rs 40 lacs on the client was easily caught due to a simple clue: The fictitious bills raised by the steamer agent were for terminal handling charges which were well supported with full details of tonnage, number of packets in break bulk cargo, the reference of the bill of entry, the vessel name, the date of arrival, customs duty paid etc. However, the fraudster made one small mistake. He did not know that Terminal Handling Charges were levied by port authorities only in respect of container cargo and were not applicable to packages in break bulk cargo! In exceptional circumstances, where the information is missing, incomplete or deliberately modified, fraud detection becomes very difficult. How then, does the examiner determine and prove the existence of fraud, particularly if he does not have full details and correct facts and information? The following is one such case study where all facts were not available and the examiner found that certain clues did not fit, and he applied 'Inverse Logic' using his investigation software to prove the impossibility of an insurance claim for stocks by fire.

#### **Case Study**

ABC was a partnership firm trading in Pressure Cookers. It stocked several brands and sizes of cookers of various companies. The stocks were kept at a warehouse in the vicinity of the office. After an outbreak of fire in the warehouse ABC lodged its claim with the Insurance Company. The claim was of

a very high value of Rs.2 million for about 15,500 cookers. Stock records which were maintained at the warehouse included the following:

1. Goods Inward Notes
2. Delivery Notes
3. No Charge Invoices for free replacements
4. Stock Ledger (ledger account for each brand and size of cooker)

A parallel stock ledger was maintained at the office also.

The Insurance Company sent an auditor to assess the claim of ABC. Since all records at the warehouse were completely reduced to cinders, the only quantitative record available to the auditor was the parallel stock ledger at the office. First, he gathered all the routine information: List of books of account, purchase and sales procedures, levels of authorities in force, and list of suppliers and customers. He also documented in brief, the nature of business and the background of the owners. Since his focus was on the insurance claim, he concentrated his efforts on the audit of stock ledger, purchases and sales.

He conducted the audit with two broad objectives in mind:

- a. To assess the correctness of the quantities of the stock on hand as on the date of fire
- b. To satisfy himself that the valuation was fair and reasonable.

As regards a), he had adopted the following audit procedures using information available in the office:-

- i. **Stock Opening Balances:** He traced the opening balances from the last physical verification conducted by the auditors.
- ii. **Quantification of purchase:** He traced quantities of goods received from the Purchase Register and suppliers' delivery notes (since GRN's were lost)
- iii. **Quantification of sales:** He traced quantities of goods dispatched through Sales Register and Delivery Notes.
- iv. **Adjustments for other movements:** He traced the free replacements from the Claims Register and obtained confirmations in writing from the partners that barring those shown in the register, there were no other free replacements.
- v. He traced quantities of sales returns and purchase returns from both credit notes and debit notes into the stock register.
- vi. **Closing balances:** He checked the castings of all quantities received and sold.

As regards b), the audit procedure was fairly simple since the firm had traded stocks only. The firm had adopted the FIFO basis of valuation and therefore the purchase cost was derived from the latest purchase bill. He listed out damaged or defective stocks on the basis of the Claims Register to bring in the necessary correction factor to the claim for such stocks. The Insurance Company was satisfied with this because, as per the policy they had to reimburse the claimant at the 'replacement value'.

All the checks stated above were a part of the direct audit approach, the 'Assessment of clues' approach. This involved an overview of the entire case which included determination and establishment of relevant facts, confirmation of chronology of events and inter-relationship of data. Though he did not have any direct query, there were several anomalies which needed to be explained or reasoned out. The following observations led him to believe that the claim was overstated and required an investigation.

- **Extraordinary Increase of total Inventory value:** The past physical verification statement of the auditors as well as the earlier balance sheets of the firm disclosed stocks less than 50% of the value as on the date of fire.
- **No evidence or documentary support in terms of orders from customers for abnormal increase:** Orders on hand as on the date of fire did not even add up to 15% of the total stock.
- **Deviation from normal purchase procedures:** Some of the purchases during the last few days before the fire were made without any advance being paid. The payments were made after the date of fire. By and large purchases were paid for with 50% advance to suppliers in the past.
- Suppliers' Delivery Notes for the purchases stated above did not bear the usual godownkeepers' signature.

However, none of these observations really were sufficient enough for him to conclusively prove that stocks were overstated. He asked the auditee for explanations to each of the above anomalies, which were given in respect of each of the above observations as follows:

- The increase in the quantum and value of the stocks was due to major sales drive which the firm was proposing to launch shortly.
- The firm had been negotiating a bulk order with a new client which was in the process of finalisation. Besides, a lot of verbal and telephonic orders were on received as on the date of fire.
- Due to growing competition, some of the suppliers were willing to favour the firm by not insisting advance payments.
- Lastly, due to heavy traffic, a large consignment of stocks came at late night when the usual warehouse keeper was not in and one of the partners had himself come and accepted the stocks.

Thus, the normal direct audit approach did raise doubts and highlighted anomalies, but did not bring the auditor any closer to the truth. Obviously, some concrete evidence was required to disprove the claim. How could the auditor do this? This was the stage where all the aspects of the direct audit had been tried out. Now was the time to apply the 'inverse logic' approach! The auditor shifted his focus to the negative aspects. What was the value of the stocks which could not possibly be true? Since the value was a function of rate and quantity, an inquiry into each was done. Manipulation of the rate seemed unlikely because it was unchanged for most of the large sizes and models for almost one and half years. That left the question of correctness of quantities. Since the correct quantities as on the date of fire could not be known, the auditor decided to find out what the quantities could not be. It was here that he hit upon the solution to the problem of proving the absurdity of the claim. The physical dimensions of the warehouse posed a limit to the number of cookers which could be stored there. Further restrictions were imposed by stacking norms which permitted only 9 cooker boxes in a column and vacant space needed for human movement within the warehouse. The audit software used by the auditor was capable of data interrogation and processing by applying queries and mathematical operations on a given set of data. The auditor keyed in quantities of stocks as on the date of fire as per the claim statements and using the following constants worked out the total Occupied Volume:

- a. Storage Volume for each size and model of cooker
- b. Maximum storage volume assuming stacking norms were correctly applied
- c. Space required for human movement correlated with each size and type of cooker as per explanations received from the management in this regard.
- d. The results gave him the desired results as follows:

Dimensional Summary for each brand of cooker for quantities as on the date of fire as per claim submitted:

Type, Company or brand name	Quantity	Volume in cubic feet	Actual volume in the warehouse for 5000 sq. feet and height of 20 feet.
Hawkins	4,650	40,345	
Marlex	2,229	24,323	
Prestige	1,900	21,002	
Butterfly	4,709	43,987	
PCA Cookers	2,015	23,456	
Total Cookers	15,503	153,113	100,000 cubic feet

The total physical volume storage space was limited to 100,000 cubic feet; it was impossible to store 15,503 cookers as stated in the claim in the warehouse! The above summary was supported by a detailed working schedule software report for each brand / company wise. For example, 'Hawkins' cookers' volume was worked by the software as follows:



Hawkins Cookers – Models	Quantity	Volume	Space provided for stacking norms and human movement	Total Volume in Cubic feet
5 Litre with separator	1,490	8,940	894	9,834
5 Litre without separator	987	5,922	592	6,514
11 Litre with Separator	565	4,520	542	5,062
Stainless Steel 11 Litre	556	4,448	534	4,982
18 Litre with separator	498	4,980	996	5,976
22 Litre with separator	554	6,648	1330	7,978
<b>Total</b>	<b>4,650</b>	<b>35,458</b>	<b>4,887</b>	<b>40,345</b>

To further prove his point, the auditor calculated the occupied volume for the previous three years where audited reports were also available and it was found that the occupied volumes were well within the overall physical limits of the warehouse as follows:

Type, Company or brand name	Volume as on the date of fire	Volume as on 31 March 1998	Volume as on 31 March 1997	Volume as on 31 March 1996
Hawkins	40,345	31,900	29,876	27,654
Marlex	24,323	12,090	16,098	12,435
Prestige	21,002	11,980	10,980	10,901
Butterfly	43,987	26,198	20,439	23,109
PCA Cookers	23,456	8,900	10,981	12,096
<b>Total Cookers</b>	<b>153,113</b>	<b>91,068</b>	<b>88,374</b>	<b>86,195</b>

When these queries were put up the firm accepted that there seemed to be an 'error' and agreed to reduce the claim unconditionally.

**In the same manner, to check the correctness of quantities of inventories every management, auditor, investigator must compute, within reason, the dimensional space occupied by the quantities of inventories represented in any financial report, and compare that with the physical dimensions of the warehouses and godowns in which they are stored. There have been instances of stocks claimed to have been lost by fire have been proved to be impossible by determining physical limits of storage capacity by measurement of volume determined by the length, breadth and height of the warehouse..**

The point that this case study highlights is that fraud detection is a creative process and is effective only if all the examination and review procedures are adopted in harmony and objectively towards the purpose of the assignment. This theory of inverse logic is an invaluable aid in situations of this sort. In order to implement this theory dynamically, a special checklist can be developed and updated from time to time and used anytime for future reference.

#### **Novel Method 4 : Using the space time dimension approach in audits and investigations**

The ability to spot abnormalities is the quintessence of audit. Most auditors include in their checklists specific audit procedures to pick up typical warning bells such as missing or altered records, unreconciled balances, cash or inventory shortages, etc. However not many auditors include in their repertoire, checklists to conduct any analysis within the dimensions of space and time. Conventionally, auditors have always concentrated on applying tests on financial aspects of data in every audit assignment, whether it is a statutory audit, internal audit, concurrent audit or even any certification. This is understandable and logical in order to report or certify the reliability of financial statements. However, it often happens that they miss out errors or frauds, which perhaps could have been spotted, if they employed tests on the non financial aspects of the data as well. In this context, the space and time dimensions affecting an audit population can provide considerable additional information for them to reach their conclusions. In particular, when errors or frauds creep in the system, they could be camouflaged and their presence may not be easily felt through direct tests on financial data alone . Sometimes examining data within the time or space dimension could give them information which may not be evidenced otherwise. In even more extreme cases, the very nature of the business may be so complex that for an auditor it is not possible to grasp and understand the processes unless he adopts a multidimensional approach. In such complex situations errors or frauds can easily transcend books of account and only by viewing data in a different dimension of time or space can they be exposed.

Therefore the space and time dimensions can be very useful to auditors in accomplishing their audit objectives of gaining a better insight into the financial statements in the following ways. They will provide further audit evidence of corroborating and confirming their findings through other checks. For example when the warehouse capacity of storage of stocks is compared with the computed volumes of quantities of stocks as per books of account, at different times during the year, it will furnish corroborative evidence that such stocks could have been physically stored. If the computed volume is greater even on one such occasion it would be a matter for further inquiry or perhaps even an investigation.

They will provide a more comprehensive understanding of complex business processes, as has been explained in the case study relating to derivative trade given later in this chapter below. In certain instances they may even provide information and evidence which may not be accessible through conventional audit procedures.

#### **Case Study**

**Facts reported** A retail store in Northern India was robbed on 5 January 2006. As reported to the police, the culprits broke into the store through a rear fire exit at about 2 a.m. when the area was deserted, evading the security guards who were patrolling the store. The thieves made their way to the second floor, where the store manager's room and the cash room were located. On the way to the cash room, the intruders stole a couple of mobile phones on display in one of the counters. The burglar alarm was deactivated, a fact the thieves knew ahead of time, in addition to knowing where the cash safe and cash room keys were kept—in a locked drawer in the store manager's room.

After breaking into the store manager's room, the thieves opened his drawer, retrieved the safe's keys to open the cash room, unlocked one of the two cash safes, and emptied all of the safe's cash contents—a little more than US \$8,000. After retrieving the money, they escaped from the same fire exit they entered the building. Given the time constraints, the thieves could only open and empty one of the safes. When the guards reappeared around 2:25 a.m., they saw the open fire exit door and raised the alarm.

The police was called in to investigate the robbery. The investigation consisted of interviews with security guards, cashiers, housekeeping staff, and other store employees, as well as a fingerprint expert analysis who did not find anything noteworthy. An insurance claim was made with the insurance company.

Apparently this store was the latest victim of a gang of thieves operating in that part of India. The police investigation reported that the theft was well planned and executed: The burglar alarm was previously

deactivated with the help of some unidentified store employee. The culprits could have been anyone: from any of the 15 senior staff members and former senior employees to an outsider. In addition, the day of the theft was a Sunday, the busiest day of the week. Because one patrol round took 25 minutes to complete, the police deduced the robbery took approximately 20 minutes, which left the thieves sufficient time to make their escape and be a safe distance away from the store before the patrol guards reappeared.

Because the investigation did not reveal any specific clues or leads, the police gave up the chase and put the case in a dormant file. The company was advised to write-off the loss, reinforce its security arrangements, and use better security tools such as biometric locks, passive infra red locking systems, and pre-employment screenings of security guards and cashiers.

#### **Insurance auditor uses digital method using time dimension tests**

Although the police investigation had ended, the insurance company had to conduct its own investigation. The insurance company's fraud examination division appointed an auditor who was also a fraud investigation expert, who instantly noticed two glaring abnormalities.

- (1) Why did the thieves steal two cheap mobile phones when there were many other small-sized, high-value items on display that could have fetched more money and could have been carried out easily as well?
- (2) He noticed the messy and disorderly state of the entire cash room, which had loose papers, boxes, and cartons strewn all over the place. If the thieves planned the theft with such a great degree of precision, they must have known exactly where to get the keys to the safe, what to look for, and what to take away. They would not have had the time or need to search for anything at all. It was unlikely that within approximately 12 minutes in the cash room, the thieves could have searched through 25 boxes and bags containing old gift coupons and vouchers. Considering these anomalies, the insurance auditor decided to adopt a more comprehensive approach, using CAATs (Computer aided audit techniques) and his investigative skills.

According to the store's point of sales (POS) system report for 5 January, the total cash on hand minus the cash intact in the unopened safe was INR 0.374 million. The POS system at the store was a stand-alone computerised system for sales and collections. The company's headquarters only received summarised sales and collections data for this location on a daily sales report sent by the store's chief cashier. As a measure of internal control, barring the chief cashier, all cashiers at various counters had very limited privileges in the POS system. Only the chief cashier had a computer, consisting of a hard disk drive uploaded with Microsoft Office to facilitate the preparation and sending of daily management information system (MIS) reports to the corporate headquarters. The insurance auditor decided to use the chief cashier's terminal to examine the POS sales and collection data and check the exact amount stolen.

#### **The time dimension test yielded startling results**

The POS sales database contained plenty of financial and non-financial data relating to sales and collections, including even the start and end time of each transaction. The insurance auditor downloaded sales data for the last three months, containing about 75,000 transactions. He then conducted a multi-dimensional data analysis, using appropriate querying facilities in the audit software, including Benford's theorem to identify anomalies and to discern any abnormal trends.

Because his initial effort failed to reveal anything new, the insurance auditor decided to make one more effort to examine data within the time-dimension analysis. He examined the data under the dimensions of time in a multitude of ways. Were there any sales after office hours, before office hours, was any cashier taking too long to complete his sale, were any deliveries received after office hours and so on and on. He was rewarded. He came across abnormal sales during late night, non working hours, on the day before the theft, which had unusually large values. This was a strange finding, because the store did not have the license to remain open after 11 p.m. He pursued this investigation by using a data extraction query and found that the total of these 'late night' transactions, (all of which took place under the chief cashier's identification number), were INR 0.374 million, which happened to be the exact amount of the cash theft.

Counter sales data from a POS was cross tabulated day-wise, time-wise for the transactions, showed midnight and early morning sales when the mall was not even open!!

Sum of SAL	DATE										
HOUR	0	2006/01/01	2006/01/02	2006/01/03	2006/01/04	2006/01/05	2006/01/06	2006/01/07	2006/01/08	2006/01/09	2006/01/10
0						28,747.75	15,952.05				
1						37,008.14	8,771.10				
2						35,070.00					
3						49,674.56					
4						40,932.15					
5						27,953.33					
6						34,319.32					
7						41,681.71					
8						44,766.75					
9						33,402.17					
10	947.00	1,950.45	857.40	2,616.58	3,854.75			19.80	337.48	239.00	1
11	21,450.54	31,736.23	16,361.90	21,719.29	19,960.24	18,822.85		26,191.67	43,565.40	21,538.14	11.3
12	49,789.44	57,795.61	51,103.06	44,310.39	15,983.69	41,144.67		50,674.88	85,770.60	24,437.80	23.3
13	72,635.25	64,914.25	48,966.66	50,488.88	20,071.65	49,221.16		68,337.07	66,989.70	61,332.89	53.8
14	56,947.44	66,394.23	47,835.90	45,110.07	19,782.17	43,485.01		61,016.92	84,550.58	53,445.13	55.8
15	94,793.74	38,311.72	49,494.75	31,539.98	22,222.01	56,048.94		79,517.67	89,246.87	39,803.28	45.6
16	83,880.67	36,576.07	50,096.99	59,811.87	18,619.55	57,102.94		65,352.88	82,930.39	60,279.65	42.9
17	93,213.51	42,909.33	56,719.00	45,326.10	18,955.26	49,655.91		63,922.12	76,704.82	56,756.49	50.9
18	85,793.39	52,222.47	45,348.84	43,339.89	14,405.03	51,166.82		79,111.34	81,022.34	46,221.76	55.4
19	83,772.80	70,651.35	70,559.23	57,694.43	14,967.52	53,577.47		76,733.85	92,840.63	55,436.96	65.4
20	77,860.81	72,112.84	58,856.09	57,968.88	23,080.94	68,166.70		75,597.87	81,803.93	58,604.71	85.2
21	71,010.66	35,490.82	46,912.87	41,575.69	16,142.80	56,947.49		64,749.59	71,966.54	57,002.04	75.0
22	28,144.27	14,191.87	10,569.69	21,281.83	3,359.24	11,961.88		34,799.57	32,492.16	10,093.96	17.7
23	5,793.90				648.00	7,854.61					
Total	826,033.42	585,257.24	553,682.38	522,783.88	585,608.73	589,879.60		746,025.23	890,221.44	545,191.81	583.1

**Reality behind the cash theft** Suspecting the cashier’s involvement, the insurance auditor obtained management permission to conduct a forensic analysis of the cashier’s terminal. He used a forensic tool, to recover deleted Word and Excel files. The recovered files provided him with sufficient information to understand the truth behind the cash theft—**there was no cash theft at all**. It was an internal embezzlement which was made to appear as one of the local break-in robberies in the area. The cashier and store manager had been involved in inventory manipulations which had resulted in accumulated stock shortages of INR 0.374 million. These shortages built up over a period of time by paying inflated suppliers’ bills for lesser quantities received or under billing customers for greater quantities in exchange for personal favors. To cover up these existing stock shortages they recorded fictitious sales as if those stocks had been sold. This was done, after 11 p.m., the day before the mock theft. However this left them with a fictitious cash collection (matching fictitious sales), for which they adroitly staged a break in robbery.

Because no MIS report indicated the specific time element of the sale, there was no risk of the duo’s fictitious sales being spotted, they merged well with genuine sales. The day chosen was a clearance-sale day, so the abnormally large cash balance was easily camouflaged. The only problem was the police investigation. However, because the store manager had good contacts with the local police station, he was able to influence their thinking and focus their attention to the spate of local robberies, and give up the chase and get the investigation completed quickly.

The duo also took all the necessary steps to make it appear as though there was a robbery. The two safes had the real and artificial cash balance respectively, and only the safe with the artificial balance of INR 0.374 million was made to appear as if it were robbed. The theft of mobile phones, clearing the safe of all items, and the disorderly appearance of strewn boxes in the cash room were merely cosmetic touches to lend more credibility to the theory of a robbery. The cashier remained in the vicinity of the store, near the rear fire exit, until 2 a.m. When the security patrol passed by, the chief cashier opened the rear fire exit lock, simulating a break in attempt. During the ensuing investigation, the store manager and chief cashier drew the police’s attention to a previously dismissed cashier as the red herring.

If it weren’t for this ability of applying the time dimensional check using CAATs, the insurance company would have paid a huge claim. This approach paid off and the retail store was able to identify the culprits and recover part of the money stolen. Without computers, data analysis, data recovery, and advanced digital tests on 75,000 transactions across 25 fields would have been unthinkable.

The key to expose frauds or even errors in many audit situations is found in the analysis of space and time. In most such cases, had the auditors not examined the data in the backdrop of the time element, the chances of misstatement in financial statements would have been extremely high.

The ability to spot 'red flags' is the quintessence of fraud detection. Typical red flags in any business environment are persistent losses, irrational human behaviour (arrogance, over-friendliness), missing or altered records, chaotic situation of accounts, etc. In the hunt for red flags, even dimensional analysis of 'space' can effectively expose fraud—for example, quantities of stocks in a warehouse as stated in an inventory statement can be compared to the total volumetric capacity of storage in that warehouse. This dimensional comparison, to some extent, would throw up discrepancies of excessive quantification of stock, if the quantities stated in the valuation statement are greater than those that could be physically stored. At an advanced level of audit, this concept of dimensional analysis can be extended even to 'time'. Time is one more dimension which can indicate the existence of fraud, but is seldom given the importance which it deserves.

The following story is very relevant, because it illustrates the importance of the time factor which proved that a hypothesis, which was apparently 'illogical', actually did have some merit in it. There was one family in the USA which frequently had ice cream after dinner. The father would drive down to a nearby drug store for this. They noticed a strange phenomenon after they bought a new car. The father observed that every time he bought vanilla ice cream from the drug store, the car would take a long time to start, as if it was obstinate and did not like that flavour. However, if the father bought chocolate, strawberry, raspberry or any other flavour, it would start immediately. When this happened persistently, he reported this to the car manufacturer. Obviously the hypothesis that the car would not start easily because it did not like vanilla ice cream was considered illogical and absurd and the company understandably viewed the complaint skeptically. However, as per the company's policy, the management addressed the complaint by sending an engineer to inquire. To the engineer's surprise, the same thing happened even when he was there. The car would behave sullenly as if it was unhappy with the vanilla flavour of ice cream bought. A few more engineers and technicians were brought in and finally the root cause was determined! Vanilla flavour was in a front part of the store while the other flavours were available at a distance at the back side. Consequently, the time taken to purchase non-vanilla flavoured ice creams was much more than that taken to buy vanilla ice cream. Therefore when the father came back after purchasing vanilla ice cream, the engine did not have time to cool down sufficiently, and therefore, took some time to start as compared to those times when the father had bought some other flavours. After this insightful revelation, a new vapour lock was designed to address this problem.

However, the real lesson in this story, is the importance of the dimension of time. The hypothesis that the engine had a delayed start because of the vanilla flavour, in its own strange way, did have some merit and this story reveals how it would have been rejected as stupid or incredible, if the time factor was not considered. Thus, a dimensional evaluation of the time element, in many situations, could give a more meaningful and possibly correct, diagnosis.

Audit and investigations can gainfully use this 'time factor' to come to more realistic conclusions. The following are a few examples of the time factor which revealed anomalies that could have gone unnoticed.

Insurance fraud A very interesting case of a fraud in an insurance claim due to loss of stocks in a truck accident on the highway was detected by the time factor. The truck was carrying high-value surgical stocks, which were to be transported from Mumbai to Pune and somewhere after Lonavala, the truck overturned at 2.00 a.m. in the night and the entire consignment was damaged. Since there was water around the spot where the accident took place, the stock was completely sogged, and then also overrun by passing cars on the highway. The condition of the stocks was so bad that a precise evaluation as regards their quality or quantity, even through forensic tests, was difficult. However, a few tests were carried out and the test reports indicated that the stocks were likely to be old, un-saleable stocks and not high-value stocks for which the claim was lodged. The claim was likely to be excessive and inflated to the extent of INR 2.5 million. To contest the claim, the insurance company needed strong irrefutable evidence to prove that the stocks lost could not have been of the value claimed. An auditor who was also a licenced surveyor and an investigator was called in by the surveyors to further assist in the evaluation of the claim.

The auditor traced the movement of the entire consignment from the warehouse to the spot of the accident and found that all papers, documents and records to be impeccable. Undoubtedly, if

there was a fraud, it was skillfully planned. The location was apparently selected with adroit planning to ensure that the stocks would be damaged beyond recognition and difficult to examine later. It was lonely and the truck accident took place at 2.00 a.m. in the wee hours of the morning, so that there were conveniently no witnesses. The driver had miraculously been thrown out of the truck with minimum injuries and the police report had been astonishingly quick in clearing the bona fides of the accident. The auditor reviewed the challan, the sales invoice, the weighment report and the gate pass relevant to this consignment. He even questioned the warehouse staffs who were present, when the consignment was removed from the warehouse. Everyone confirmed that high-value surgical stocks had indeed been removed from the warehouse on that night by a vehicle having the same number which had met with an accident. It was then that the auditor noticed the time element. The auditor observed that the recorded time of exit of the consignment from the gate as per the gate pass, was 1.30 a.m. on the same night as the accident. The accident happened at 2.00 a.m., somewhere after Lonavala, almost 100 km away from this warehouse. How could the truck have reached that place in 30 minutes? Impossible! The time on the weighment slip also confirmed that the weighment took place at 1.15; therefore, the gate pass exit time could not have been materially wrong. The staff also recollected that it was well past midnight when the weighment took place.

Thus, it was confirmed that the stock was removed from the Mumbai warehouse at a time which would not have enabled the truck to reach Lonavala at 2.00 a.m. This was the clue which the police followed up and the sinister fraud was revealed. The company had removed good stocks through a different truck with a false number plate which matched the number plate of the truck, that met with the 'accident'. That accident was well planned and executed at a predetermined lonely location. Water was thrown around that spot after the accident to make the damaged stock even more difficult to analyse. It was learnt that the stock actually comprised of old unsaleable stock, while the truck which had the false number plate was transferred to some other location and those good stocks had been sold at a huge profit in the gray market. In all respects, the perpetrators had planned the fraud to the minutest detail. However, they missed out the relevance of the time factor which gave them away.

Payroll fraud The payroll audit of a large company had not revealed anything unusual. Routine discrepancies regarding allowances, deductions and tax payments were rectified and the sample check carried out had given the auditor the desired confidence level. The company had a swipe card access system which gave the attendance. However, by using digital tools to study the time pattern of attendance of the employees, the auditor saw a strange phenomenon. Certain employees, en bloc, would come in the morning exactly at 9.00 a.m. and leave in the evening exactly at 5.00 p.m. This was humanly impossible and an investigation revealed that these were employees who had left the company, but their swipe cards had not been de-activated, nor had their identities been deleted from the system. The file handed over to the payroll department included default in and out time swipe values (9.00 a.m. and 5.00 p.m.) which were processed and cheques sent directly to the bank accounts of these departed employees. The spoils were shared between the time-keeping department employees and the departed employees. Had the anomaly in the time factor not been pursued, the auditor was unlikely to have spotted this fraud.

Conclusion It would be worth ones while to update the audit checklists and internal control questionnaires to inquire into the time factor wherever relevant and to use digital tools to examine audit data also keeping the time factor in mind. For example, if there are cash shortages, do they occur only during certain slots of time, or if discounts are given excessively, can they be segregated timewise, or can sales/purchase deliveries be examined with reference to time? These may throw up astonishing results which may change an auditor's conclusion. There can be many more such examples where the auditors will find 'time' a very useful guideline to depend upon. Space and time are two universal dimensions which have a language of their own. These are dimensions which cannot be changed by any fraudster and the 'truth' values in these dimensions are the strongest and most irrefutable evidence.

### **Novel Method 5: Use of surprise repetition in audit and investigations**

In a game of cricket, in order to get a good batsman out, the skipper usually attacks the batsman by using his best bowlers. However, if the batsman gets settled, the skipper often tries different kinds of bowling attacks, to gain a breakthrough. The skipper will try all sorts of tactics such as spin, googlies, medium pace or fast bowling to get the break through. However his strategy has a much greater chance of success only if an element of surprise, by exploiting the unpreparedness of the batsman, can be brought into the attack. The same principle can be equally effective in the field of audit and risk management. The chances of detecting any abnormalities by regular well defined and relatively predictable procedures become slim in certain situations where auditees are fully conversant with the timing and nature of the procedures of an auditor. Only innovative modifications in the conventional procedures, introduced with an element of surprise are capable of ferreting out fraud or errors. **Repetitive use of certain audits tests, using a different timing with an element of surprise, is one such method which could phenomenally increase the effectiveness of any audit.**

What then is surprise repetition? Surprise repetition is using a standard audit procedure repeatedly, when the auditee least expects it, on a surprise basis. It differs from the conventional surprise verification test which is expected once by an auditee and he remains prepared to face it. However once the surprise test is conducted generally the auditee becomes complacent and least expects it to be repeated immediately or within a certain time. The objective of the auditor in applying a surprise 'Repetition' is thus two fold. On the one hand it tests a control on two different occasions thereby increasing the level of assurance of the auditor and on the other, it brings in a greater element of unpredictability and surprise, which is so very important for a fair evaluation of the control.

#### **Audit procedure and documentation**

There is no difference in the procedure for application of any test a second or third time. The same procedure that is applied conventionally needs to be followed. What is essential is to keep full documentation of the dates, time, place and observations for each time that the test has been applied.

#### **Situations where surprise repetitions can be useful**

##### **Verifications of inventory, cash, fixed assets, investments, third party stocks**

Existence of assets on balance sheet dates are often confirmed by physical verifications by auditors wherever possible. The auditor can re-verify some of the assets at a later date, not too far apart from the balance sheet dates to ensure that they were not borrowed, or temporarily created.

Compliance tests of internal controls. Disbursements of wages, procedures for obtaining quotations for sale and disposal of scrap, material weighments, all can be verified repeatedly. Such repeated verifications have shown results such as adjustments in weighment scales, misuse of unpaid wages, different procedures for disposal of scrap on different days, etc.

##### **Process audits, internal audits, operations audits, loan document verifications in bank audits**

For example in banks, collateral security in the form of bearer bonds may be shown to an auditor as security during the audit which actually may be temporarily obtained from other sources and returned after the document scrutiny was over. However in one case where the auditor asked for a re-verification the truth was exposed. Not only was there no security, but the loan had already turned irrecoverable.

#### **Case Study**

In a tea manufacturing company, there were about 10 tea estates in a particular area at dispersed locations. The tea leaves were grown, collected, processed and packed into boxes at each of the tea estates. Each tea estate was under the control of a tea estate manager who had under him over 100 plantation workers, accounts and payroll staff. The main expense was the monthly staff payroll, most of which was paid in cash. The company had its team of internal and external auditors who regularly visited all the estates in succession on fixed dates each year. These auditors usually had a well planned schedule which had a convenient route so as to facilitate a visit to all the estates within a given time. On an average, each team spent about 3 days at each tea estate before it moved on to the next tea estate. The review plan included a comprehensive check of all finance related areas such as

sales, local purchases, payroll, stock valuation and even included a 'surprise' cash and inventory count at any time of the auditors' choice during their visit. For years this routine checking continued and no serious discrepancies were ever reported.

**Why was a novel method required?**

However, in one year the audit team included a member who had some experience in fraud detection and risk management. He felt that this was a case of the '**stale procedures syndrome**'. He explained to the chief auditor that though the areas covered were exhaustive, the plan was too predictable and repetitive. While he explained that he did not mean to suggest that there was foul play, this was a typical situation where a batsman was well settled and was attacked by a bowler with the same predictable line and length. Therefore he knew every trick and trap of the bowler attacking him. In such a situation, however good the bowler may be, it was difficult to get him out. A new approach was required.

In the given audit situation, like the batsman above, an intelligent fraudster would find the standardised audit exercise as easy to face, tackle or even deceive. He pointed out that the surprise cash count was no surprise at all because their audit schedule was well known and given to the tea estates months before the audit team even arrived. He pointed out that no cashier, store keeper or manager would be foolish enough to leave any trace of any wrong doing when they knew exact dates of arrival of the audit team and the exact audit plan. The cash or inventory count by auditors would never disclose any discrepancy, because a surprise verification in a three day period was not a surprise verification at all. Obviously, the cashier or store keeper would be thoroughly prepared for the 'surprise' count during those three days' visit of the audit team. The chief auditor conceded the point and asked him what could be done in the given situation. The tea estates were on mountains and far apart and there was no other means of transport to facilitate their coming unannounced. The expert suggested that the planned audit route be changed suddenly, and, to have at least one tea estate visited twice in quick succession. Accordingly, when one of the tea estates' audit was completed, the audit team moved on to the next estate and began the review there. However one of the team members was sent back to the previous estate immediately, on the pretext that he had forgotten something there, but actually to conduct a second cash count, stores verification and payroll checks. The results were astonishing. The cash count revealed a cash shortage of INR 3.024 million. The payroll also showed plenty of empty envelopes of 'unpaid' wages.

A detailed investigation was ordered and it was found that there was a cartel of some tea estate managers, indulging in cash and payroll manipulations. They were using the company's cash for their own parallel businesses and other ulterior motives. The resulting cash shortages were covered up by transferring cash from one estate to another during the visit of an audit team. The transfers were done adroitly so that the cash reached just before the audit team arrived at the tea estate. In fact the cash and audit team were moving simultaneously all over the tea estates through the month long audit team's visit. The surprise repetitive cash verification test revealed that the tea estate whose audit had just been completed, had dispatched some cash and some of the unpaid workers' wages to another tea estate to cover up a shortage there and to be prepared to face the audit that was to take place there shortly as per the audit schedule.

This fraud required no great rocket technology; it depended entirely upon the predictability and standardised nature of the audit plan used and implemented for the last ten years. In fact the very simplicity of the fraud was astounding and remained undetected for years together merely because audit techniques remained unchanged.

There is no greater comfort to an embezzler, fraudster or a wrongdoer than a predictable audit programme however exhaustive and well designed it may be. All white collar crimes are essentially manipulations executed with intelligence and adroitly adapted to a given system and environment. Unless variation and surprises are brought in, the planning and execution of frauds becomes easy.

Persistence or repetitive use of certain audit techniques, with variation in timing, in given situations can considerably increase the element of surprise and also reveal how truly robust a system is. A singular, isolated or one-off test may not be sufficient for an auditor to come to a conclusion.

The chances of detecting fraud or error by regular well-defined and relatively predictable procedures become slim in certain situations where auditees are fully conversant with the timing and procedures of an auditor. Only innovative modifications in the conventional procedures, introduced with an element of surprise, are capable of ferreting out fraud or errors. **Intelligent repetitive use of certain audit tests, with an element of surprise, is one such method which could phenomenally increase the effectiveness of any audit.**



**Conclusion**

Persistence or repetitive use of certain audit techniques, with variation in timing, in given situations can considerably increase the element of surprise and also reveal how truly robust a system is. A singular isolated or one-off test may not be sufficient for an auditor to come to a conclusion.

**Corollary**

Surprise rotation is also a good technique to expose latent malpractices. Cashiers, storekeepers, quality assurance officers, or for that matter any other service providers in a company should never be allowed to do their tasks endlessly. They must be forced to go on leave or vacation. In fact the element of surprise rotation can bring unknown revelations. This is because if a person has been involved in some wrongful practices, when he goes on leave, he will ensure that all loose ends are cleared and that he won't be exposed. Therefore the only thing which will expose a wrongdoer is the element of surprise.

In a company which had five branch offices in the five metro cities, the CEO suddenly decided to rotate the branch accountants with immediate effect. All hell broke loose but the company benefited. Each accountant found out and reported several non compliances with policies, nexus with suppliers, cash manipulations and receivables' inaccuracies. All the branch accountants were like little kings in their own domain till this extraordinary step of surprise rotation was affected.

**Novel Method 6 : The principle of mirror imaging applied in detection of a major project expense fraud.**

The laws of physics tell us that every image of an object in a mirror is identical to the object. A normal glass mirror reflects whatever is placed before it without distortion. This simple phenomenon can have an effective and meaningful application in fraud investigation. The mirror imaging principle states that procedures and controls, in a given situation, applied at one place should be possible to apply at another, if the set of circumstances are the same. Results should be same or similar and deviations could mean that something is amiss. What is emphasized here is that an examiner must include in his repertoire, certain techniques and methods which will alert him to such possibilities if they exist. Sometimes the doctrine of mirror imaging is one such tool which can enable an auditor to take a comprehensive view of similar activities and weed out symptoms of inconsistencies. For example a company having depots in each state in the country having the same accounting software must have similar results or problems. If it has a specific problem at one place, logically it should occur at other depots as well. This imaging theory can be very effective in such situations. Similarly, consider identical factories, units, branches, sales offices retail chain stores, supermarkets and malls where the products are the same and the same systems, procedures, and controls are replicated. Each may be considered a mirror reflection of the other and if at one place a system can work efficiently there should be no reason why it would show different results at another place. An examiner would therefore considerably benefit from application of such theories as and when the need arises. The following is an illustrative case study where an auditor applied this mirror imaging technique in fraud detection

**Case Study**

BEL was an engineering company with global presence, having several large project sites in India. In one of its large projects at Haldia, a special crane had to be temporarily imported from a Singapore multinational company. The crane was shipped from Singapore to Calcutta which was at a distance of about 90 kms. from the actual site where it was needed. The crane was to be used for about three months and returned back to Singapore. However, it was actually returned after more than 5 months. Consequently there was a huge overrun in the budget, for costs relating to import and use of the crane. Originally budgeted at Rs. 3.5 crores, the actual expenditure was 7.1 crores! The major relevant costs debited to this project were as follows :

Hire Charges	Rs.1.2 crores
Customs Duty	Rs.0.6 crores
Transportation, Loading & Unloading	Rs.4.2 crores
Others	Rs. 1.1 crores

The crane was shipped along with 180 different packets of various accessories, consumables, extra weights, spare parts and tools for erection and making it operational. The company had entered into a contract with M/s Couriers and Carriers (CNC), for ensuring safe transportation of the crane from Calcutta to the site, for a specific fee and reimbursement of incidental expenses at actuals. As explained, on reaching Calcutta, the crane had to be dismantled to be unloaded. The unloading of the 180 accompanying packets was no easy task and a lot of time and effort was involved in their transportation to the site. The unloading operation had required several cranes and taken about 14 days (4 for the main crane and 10 days for the 180 packets). The crane and some heavy packets were transported over hydraulic axles and the rest were carried in trucks to the site, on rough terrain, narrow roads and unsafe conditions. The entire transportation and reloading procedure had to be repeated conversely while shipping back the crane to Singapore.

The internal review by the management had not yielded any adverse finding; in fact the explanations, for variances in the budgets, seemed reasonable and quite probable. In brief the following justifications for the unforeseen costs were given:

- a) Collective impact on costs on account of pressing deadlines for work completion, depletion in dollar rate, and substantial increase in the hire time of labour and equipment.
- b) Practical difficulties in budgeting and estimating transportation, and unforeseen loading and unloading costs
- c) Factors such as poor roads, transport facilities, and unskilled labour had created considerable difficulties in the movement of the crane to and from the site and had led to high costs of repairs

d) Heavy costs for disassembling the crane while unloading at Calcutta port, and again while loading it on the barge for the return journey back to Singapore, entailing similar costs which had not been foreseen earlier.

The management had been convinced that the cost overrun was inevitable and ratified it.

**Audit Procedure:**

The auditor applied all routine tests including:

- 1) Vouching all expenses incurred on the crane hire activity using standard audit procedures of document examination, and obtaining and recording explanations.
- 2) Scrutinised budgets and actual costs in detail.
- 3) Examination of vendor selection procedures and
- 4) Study of documentation.

General audit review of authorisation procedures, control procedures' review and documentation was also conducted. Barring a few routine queries, no adverse finding was noted. The hire charges of the crane were payable in foreign exchange and approved at highest level and were further ratified by the board of directors and therefore there appeared to be little scope for any manipulation or wrongdoing. The other main chunk of cost was customs duty paid to exchequer for which there were prescribed rates and well supported by official receipts. Transportation, loading and unloading costs were paid to a third party (CNC). The auditor had verified CNC's bills for adherence to the terms of the agreement and documentary evidence in terms of bills, supportings and detailed expense statements. Other expenses were not material and for which proper supportings were available. After going through the available documentation, and applying all routine and appropriate audit tests, and obtaining explanations as warranted the auditor did not have any direct evidence of any wrongdoing. Even then the auditor felt that the extended procedures were necessary since they had been unable to understand or satisfy himself as regards the following:

- a) Though CNC had been selected after compliance with vendor selection procedures, they had very little experience. The company had been recently set up and did not have any major assignments on hand.
- b) How could such a large cost overrun could be explained away on account of 'unforeseen factors'. He was not convinced that budgeting the crane activity was so difficult so as to lead to such a massive overrun
- c) Almost the entire variance in cost was in the costs billed by CNC relating to loading, unloading, and transportation.
- d) A lot of transportation costs for vehicles and other cranes deployed by CNC could have been inflated, particularly because the bills had been submitted from M/s CNC post facto; and accepted at face value. Log sheets of vehicles were not signed in all bills. (The explanation given was that the crane and the accompanying packets had arrived on different vehicles at different times and odd hours, therefore some signatures may have been missed out by oversight.)
- e) Why wasn't consent taken from the senior management in Mumbai for disassembling the crane at Calcutta, an unforeseen cost? Even granting the urgency, there was not even a fax on record and this decision had been taken unilaterally by the local manager.
- f) Almost all throughout the journey of the crane from the Calcutta port to the site and back, the crane was in complete control of CNC. This gave it sufficient freedom to bill anything to the company without recourse by way of verification.

All these issues and other minor inconsistencies in various explanations obtained, gave the auditor a high level of discomfort. Therefore, he discussed these matters with the senior management. They were concerned and his queries seemed reasonable. They consented to his investigating further.

**Application of the mirror image doctrine.**

Till now the auditor had applied all the correct audit checks and tests which could have been applied by any reasonable person in such a situation. But he realized that his view was a micro view, i.e. a view of the variables from close range. What he still needed to apply was a 'macro' view or a bird's eye view as against a micro view or an ant's view of the crane hire activity. The dismantling of the crane at Calcutta while unloading and then again while reloading on the return trip reminded him of a mirror image. The mirror gave him a new direction of thought and drew his attention to the crane on the other side, ie, Singapore. Applying the same logic of mirror image, he thought that if the crane

had to be dismantled at Calcutta Port for unloading, then how was it that the crane was in an assembled state on the barge, particularly if it had to be dismantled for loading/unloading? There was no sense in dismantling it at Singapore port for loading and then assembling it back on the barge and then re-dismantling it again at Calcutta port.

**Extended Audit procedures, based on new clues.**

The auditor then once again re-examined the entire crane delivery operation. The forwarding and clearing (F&C) expenses, he observed, were supported by several third party bills which were available with vehicle numbers and time-logs. However he found that when all the bills were examined together they were in continuous serial numbers, implying that during that period all those parties had no other client except CNC. He felt that some more information and evidence was required to satisfy himself that the overrun was not on account of any wrongdoing. He requested the management to allow him to conduct an investigation to determine the facts.

On getting the management consent, the auditor then contacted the imported crane owner's office at Singapore to gather the information on loading operations of the crane at Singapore and got the necessary data to answer the question he had posed to himself. He was surprised to learn that the crane was loaded on the barge, in an assembled state. It was shipped in a semi-working condition such that it had sufficient maneuvering capability to lift all the 180 packets shipped alongside. Thus there was no need for any dismantling at Calcutta and certainly not for hire of all those cranes to lift the accompanying packets billed by CNC. Realizing that his inquiries were yielding new results he extended his investigation further. His further investigation revealed that the crane-vehicle numbers billed were registered with the Motor Registration Department as private cars and were not commercial vehicles as billed by CNC. Thus the crane bills were fictitious. This was further evidenced by the denials of the third parties on whose letter heads some of these bills were made.

Final results of the investigation after due interviewing and confrontation of this new evidence showed that, the site manager confessed that along with the help of CNC, he was able to astutely insert false third party bills to defraud BEL. He had ideal conditions for such a fraud because, on the one hand, deadlines for project completion were the topmost priority for the senior management. He had been given a blanket clearance by the senior management in Mumbai for getting the project completed in time. Consequently many high value bills were getting passed without queries from the senior project directors. On the other hand, the accounts and finance department was already under tremendous pressure on account of a major internal audit by the parent company, new software and manpower constraints. Moreover, they did not possess any technical expertise or even knowledge to realize that a particular expense was not required. The fraud was a cakewalk and was not noticed till about six months later when that project was taken up for audit.