A Treatise on Ostriches, Lies, Damn Lies and Public Transport (not to mention Monkeys)

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Abstract:

There exists a strange and compelling myth that goes something like this:

"The major problem being experienced by public transport, especially in Australia, is brought about by the fascination with the 1/4 acre block   The low population density that is brought about by this fascination is the primary cause of the low levels of and reductions in patronage that we are experiencing"

We are told, in all honesty, that if we can reverse the trend of lowering population densities that public transport will see a popularity resurgence and increased patronage We contend that the loss of public transport patronage, like all complex problems, has a simple solution — and that solution is wrong; at best it is misleading or incomplete. Losses in patronage are not solely caused by low population densities but are also the result of factors far closer to home and that are under the direct control of the planners, government and public transport management

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Introduction

*The brain is a wonderful organ, it starts working
the moment you get up in the morning and does
not stop until you get to the office*
                                        Robert Frost

If population density were to double then public transport patronage, from the same area, would be expected at least to double We don't argue with this trivial analysis, although even these simple assumptions could be argued We will support our assertions with a simple mathematical model

Let's assume, for the sake of convenience, that all public transport patrons lived at a single point that is at the current average distance from the CBD as they are now This situation would not alter, markedly, the current public transport task. The main difference would be the elimination of vacant seats (ie occupancy could increase), because all passengers are picked up at the same point, and we could apply fewer buses to fulfil the task. The same number of people would need to be picked up and the total travel distance would not alter to any great degree What public transport hopes to alter by increased population density is the possible numbers of patrons in the catchment areas.

Suburban Design

Brindle s Bromide
The obvious quite often isn't
A Murphyism

There are other ways to increase the population within the catchment areas by the simple expedient of increasing the size of the catchment We would speculate that land-use planning can increase the physical size of the catchment area thereby increasing patronage. Newer suburban street systems are rather convoluted and to reach a bus route requires travelling larger distances than in the straight line street layouts of older suburbs We design subdivisions in this way for the best of motives - we recognise the 'need' for a car to make regional trips but wish to minimise the intrusion of car traffic on our residential lifestyles. In the process, we make short journeys (to bus stops, shops, schools, etc) longer These long travel distances make it unattractive to travel, on foot, to the nearest bus stop and it is a pointless exercise to travel by bike or car to these stops because of the lack of parking or security at these locations. The problem then is not so much the quarter acre block as the street layout in new suburbs which limit accessibility to public transport routes (and other facilities).[1]

Public transport routes, themselves, are often made circuitous by the self-same road layout and the lack of continuity of planning between adjacent subdivisions Bus route planners are forced either to accept increased journey times (and consequent additional bus requirements) or to route buses along primary roads which almost by definition are further from where people live and often have limited access from residential areas.

If, cut through these new suburbs, there were paths that fed directly to public

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[1] One of the authors once lived in a newly-developing area where no-one lived more than 800 metres (as the crow flies) from the local shopping centre - nearly everyone drove to the shops!

transport services then we have increased the size of the catchment area and hence the potential patron population. However, these would need to be more than the token paths between cul-de-sac heads which were popular in the 1980's, but which were rarely used and are now being abandoned because of the security problems they pose. Alternatively, we could adopt a more fundamental approach and actually design subdivisions on the basis of primary facilitation of local walking and cycling trips, recognising the car as having lower priority.

It would be a far easier task to improve access to public transport via a simple, positive and attractive planning provisions than via enforced increases in living densities. People don't like living cheek-to-jowl and will fight its forced introduction. There would appear to be little point in developing very high density residential areas and find that no one goes there to live, or if they do, find that we have created slums, enclaves of crime and poverty and other forms of social degradation. In any event, how much of a city could be developed in this manner, surely not so much that it could make a significant difference to public transport patronage and/or deficits.

Head-to-Head with the Car

> *Help people develop their full potential*
> *Catch them doing something right*
> Blanchard, K., & S. Johnson The One-Minute Manager
> Fontana/Collins 1983

The problems confronting public transport are far more deeply rooted than a simple lack of high density living. When public transport becomes truly competitive with the private car we see what can be achieved. This can be exampled by the introduction of the bus priority lane on the Kwinana Freeway in Perth. The introduction of the bus-only lane saw public transport patronage increase by 50% in 12 months over the areas serviced by the buses that traversed this freeway. Here is an example of public transport competing with the private car, head-on, and winning. This is but one example of how public transport has to change so as to continue to fulfil a valid function in our new and changing world. Attempting to alter the way people think and live is bound to fail and to hold the lack of achievement of an impossible goal as the reasons for failure is a nonsense and a lie.

Public transport has been unable to maintain its share of passenger trips, in recent times, even when ridership has been increasing. In Perth, for example, although public transport patronage has been increasing at about 1.8% per year since 1983, reversing a long period of decline prior to then, its proportion of trips has continued to decline, from 8.1% in 1976 to 7.0% in 1986 and around 6.7% in 1989. (Transport Strategy Committee, 1990)

The reasons are self evident. Public transport is inconvenient when compared to the private car. To remain viable into the future public transport must offer advantages that the private car cannot offer or point out the relative disbenefits of private car travel. One of the most potent advantages of public transport yet found, in Perth anyway, is the speedier service to the CBD via the use of the bus priority lane on the freeway.

Currently the bus priority system is constrained to a limited section of the freeway. If this system could be extended throughout the city and suburbs, bearing in mind that bus priority encompasses such technologies as traffic lights, rights-of-way, etc not just bus priority lanes, we could see dramatic increases in the use of public transport. However; any dramatic increase in public transport patronage could become unmanageable; neither the State Government or the West Australian tax-payers could afford any dramatic increases in fleet size or service levels A possible solution to the problem of high patronage levels could be peak spreading

More generally, the exigencies of public sector financial management might lead to the setting of public transport objectives which view improved cost-recovery as an objective in its own right. Whilst we accept that public transport fares in Perth are too low and that increases are desirable, even recognising the social and environmental benefits of public transport (Travers Morgan, 1991), we do not want to see Perth step onto the classic downward spiral of:

- higher fares to improve cost recovery;
- loss of patronage to private car travel;
- reduced services resulting from lower patronage;
- higher fares to overcome further loss of patronage

To be strictly correct, it is unlikely that this particular pattern would be followed, since most public transport passengers in Perth are 'captive' – that is, they do not have access to alternative means of travel (principally the private car) Higher fares, purely as a means of improving cost recovery would, however, make it significantly more difficult to achieve the type of city we see as desirable for the future of Perth Public transport would become entrenched as the 'mode of last resort', instead of becoming an integral part of the fabric of the metropolitan area, and the continued car-domination of Perth would be ensured

Increases in service levels, rather than low fares, are the most effective means of attracting people to public transport (Transport Strategy Committee, 1992) Whilst such a strategy would increase the total public transport deficit, from its current level, it would provide the basis for its stabilisation and, importantly, would lead to a reduction in the real deficit per passenger Service frequency should be given priority over higher speeds, in increasing service levels, to reinforce the development of Strategic Regional Centres, as well as central Perth, and to minimise the extent to which the benefits of the improvements are taken out in longer journeys.

Business Hours

Good ideas don t just fade away They are slaughtered by rampaging squads of carefully attired, analytical managers

It has been suggested that CBD retailers hours of opening be regulated to between 10:00 am and 7:00pm There seems little point in retail establishment opening at 9:00am to service non-existent customers and closing just as city workers are leaving work, too late to shop CBD based government offices could operate in the same way, opening and closing later in the day or opening at 7:00am and closing at 4:00pm, so that customers

can seek services before they themselves have to attend work; such suggestions tend to get short shrift at present During the daylight saving debate in WA the greatest push for daylight saving came from businesses that require consistent communications with businesses on the Eastern seaboard. Why cannot these businesses simply open during the hours that suit them best? Why is it necessary for the rest of the State to mimic their opening and closing hours? All these suggestions spread the peak and hence make it easier for the public transport system to handle the patronage load without recourse to increased fleet size or manning levels

Route Length

Hoare s Law of Larger Problems
Inside every large problem is a small problem struggling to get out
Another Murphyism

Another problem with public transport is the distance over which buses must run, empty, to arrive at the start of their route. If these distances could be reduced then the transport task is reduced since fewer buses are required to maintain the same service level. These distances can be reduced by the introduction of regional centres (see figure 1) The buses service only their local regional centres and patrons, if they wish to continue their journey, do so by train or high speed, high volume feeders that service the CBD We must admit that patrons dislike transfers and that this suggestion would require further evaluation but the potential value is obvious The new northern suburbs railway in Perth is designed to operate in precisely this way; it has been forced to do so because the line runs down the median of a freeway, largely precluding walk-on access
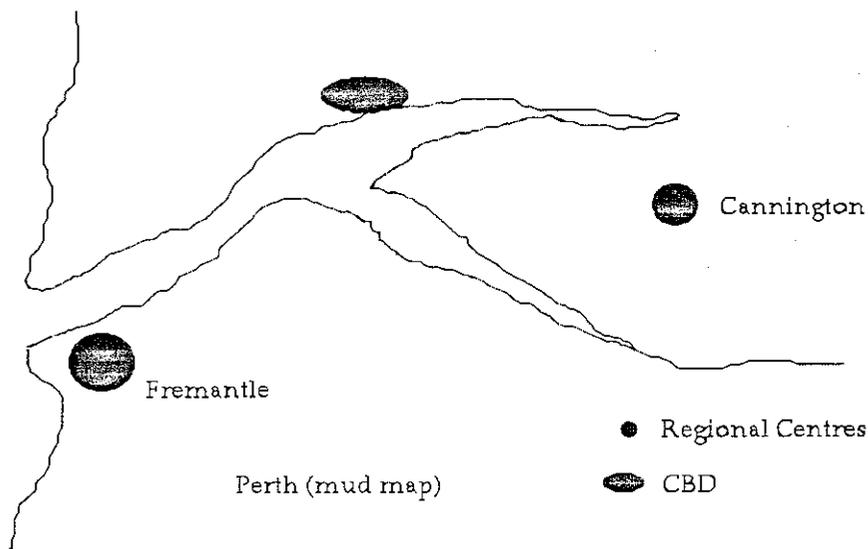

Fig. 1. Simple Schematic of some Perth Regional Development Centres.

Where Can We Create Change?

There is a young madman proposing to
light the streets of London
Sir Walter Scott 1810

If we do make changes to the urban structure we are almost certainly limited to newer outlying suburbs. Existing residents in suburban areas will, legitimately, fight against any dramatic increases in densities or alterations to the existing layout. Similarly, those in 'special rural' subdivisions (0 4 - 2 hectares) fight the encroachment of the quarter acre block. These people have purchased and worked for a particular lifestyle and we (the government) have no right to forcibly alter that lifestyle against their wishes, unless, perhaps, the change is a patently beneficial one such as urban renewal and rejuvenation of depressed areas and even then we are not positive as to the governments right to **force** change against residents wishes

Given that we are limited to controlling the urban structure of new outlying suburbs and that, generally, these suburbs lie far from the CBD, the main destination, at this time, for public transport, we have a problem. The public transport task is exacerbated by the long distances from the CBD. In an attempt to overcome the tyranny of distance, not only for public transport, the State Government has nominated eight Strategic Regional Centres. Seven of these centres are located on existing or proposed rail or high capacity road links. If we can adequately develop these centres into viable alternatives to the Perth CBD we could then see the distance problems for public transport being ameliorated

If Strategic Regional Centres are to be supported by public transport in improving accessibility to employment, rather than their simply being staging posts on a system which is oriented to serving the Perth CBD, they will need secondary radial public transport systems, the main function of which would be to provide access to those centres (Self 1991) Facilitation of access to the Perth CBD would be a secondary function, and might require, in many cases, a transfer from one mode (or one vehicle) to another. Such a system creates a public transport focus on the Strategic Regional Centres, which can also serve some of the local and cross-suburban transport needs, especially if these secondary radial systems are, themselves, inter-connected

Some Simple Maths

I like your opera I think I will put it to music
Beethoven to a fellow composer

Given that the changes suggested can be brought about to public transport and urban structure we could see dramatic reductions in average travel distances and increases in public transport patronage without significantly changing the public transport task. Table 1 illustrates some purely hypothetical possibilities [2]

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[2] Whilst the specific numbers are hypothetical, the directions implicit in them are realistic and we believe the general conclusions drawn from them are substantiable

Table 1.   Population, Travel Distance and Public Transport.

a) As Is	CBD	Inner Suburb	Outer Suburb	Totals
Population	10000	895000	123000	1028000
Proportion Using Public Transport	0.5	0.15	0.08	0.15
Distance to Work Centre	1	10	30	11.02
# Public Transport Passengers	5000	134250	9840	149090
# Bus Trips Required	83	2238	164	2485
Total Travel Distance	83	22375	4920	27378

b) Regional Centres	CBD	Inner Suburb	Outer Suburb	Totals
Population	10000	895000	123000	1028000
Proportion Using Public Transport	0.5	0.15	0.08	0.15
Distance to Work Centre	1	8	15	8.23
# Public Transport Passengers	5000	134250	9840	149090
# Bus Trips Required	83	2238	164	2485
Total Travel Distance	83	17900	2460	20443

c) Bus Priority	CBD	Inner Suburb	Outer Suburb	Totals
Population	10000	895000	123000	1028000
Proportion Using Public Transport	0.5	0.19	0.15	0.19
Distance to Work Centre	1	8	15	8.49
# Public Transport Passengers	5000	170050	18450	193500
# Bus Trips Required	83	2834	308	3225
Total Travel Distance	83	22673	4613	27369

d) Urban Consolidation	CBD	Inner Suburb	Outer Suburb	Totals
Population	10000	1018000	0	1028000
Proportion Using Public Transport	0.5	0.15	0.08	0.15
Distance to CBD Centre	1	10	30	9.71
# Public Transport Passengers	5000	152700	0	157700
# Bus Trips Required	83	2545	0	2628
Total Travel Distance	83	25450	0	25533

The first section of the table shows the current situation with average travel distance being 11 02 kms. 149 090 passengers and a total of 27 378 bus-km The second section indicates the changes which might be brought about by intensive use of the regional centres: average travel distance reduces to 8.23 kms and total bus-km to 20 443 The third section shows what could happen with regional centres and changes to urban structure and bus priority: 8 49 km average travel distance. 27 369 bus-km travel and 193 500 patrons. The last section indicates what might happen if all existing people were relocated to within the inner suburbs (ie the extreme effects of higher density living): 9 71 km average travel distance, 25 533 bus-km total travel and 157 700 patrons.

It is clear that increased densities do not bring about significant increases in patronage or reductions in public transport task and this alternative was biased very significantly in favour of public transport by assuming that no outer suburb services would be required. The 'best' alternative is the third; where bus priority, urban structure and regional centres are considered and altered to allow for the better use of public transport

Getting Them into the Buses

Travel at high speed is not possible because passengers,
unable to breathe would die of asphyxia
Dr Dionysius Larder in discussion of train speeds of 15 MPH

There is evidence to suggest that once people are in their cars it becomes an almost impossible task to get them out of them (Baldassare, 1991) - at least until they get to their ultimate destination. Given this, it becomes imperative, if public transport wishes to maintain a high level of commuter and other trips, that the public not be driven to purchasing a car in the first place by a lack of service. To achieve this we need to ensure that adequate public transport services are introduced into new residential areas as soon as, or maybe even before, people move in. If we leave new outer suburban areas unserviced the residents will, of necessity, purchase cars for travel. Once they have purchased that car; public transport is left out in the cold and we will never get those people back into public transport. It might be simpler to delay or eliminate the purchase of a car, by supplying adequate service in the early stages of suburban development, than it is to attract them back into public transport after they have bought a car

An obvious spin-off benefit is the reduction in transport disadvantage and social isolation in newer suburbs. We easily forget that, despite the car-domination of Australian cities, many people do not have independent access to a car. In Perth, for example:

- 26% of the population is too young to have a driver's licence;
- 19%, whilst old enough to drive, do not have a licence – many for reasons other than choice, such as disability or the cost of owning a car or historical circumstances (particularly amongst the elderly);
- many of those do who have a licence to drive do not have access to a car – for reasons of choice or cost

The transport disadvantaged are disproportionately to be found among the young (100% of those younger than 17). the aged (43% of those over 60 do not have a driver's licence) and women (25% of women over 17, and 60% of those aged 60 and over, do not have a licence to drive) However, even those of us with a car are 'transport disadvantaged' from time to time – when our car breaks down or, indirectly, when we have to provide transport for our children to get to school or sporting activities.

Goals

> *And God created the organisation and*
> *gave it dominion over man*
> Genesis I, 30A subparagraph (viii)
> Townsend R Up the Organisation Coronet Books 1971

We also believe that public transport agencies can easily get their goals messed up The objective of public transport should be 'to assist in the undertaking of activities that are separated by distance', not 'the running of an efficient public transport service' If their goals were to change in line with that suggested then public transport agencies would be looking at teleworking, telecommuting, remote learning[3] and other mechanisms for assisting the public in the elimination of trip taking They would also be looking into urban planning, land use, assisting in the development of regional centres and other actions that have the potential to reduce the travel distances required to undertake activities

To its credit, Transperth does play a significant role in matters of urban and transport planning in Perth. However, it is usually easier for public transport operators to concentrate on building new and bigger bus stations, extending suburban rail systems[4], converting rail to electric[5], purchasing larger buses[6] and other actions that are simple extensions of traditional methods of dealing with the problems confronting public transport

Why Do We Do It?

> *Prediction is very difficult especially about the future*
> *Neils Bohr*

Travel is a derived demand, we don't travel because we enjoy it, we travel so as to undertake some activity at the destination In many instances the activity can be performed remotely or the origin and destination can be brought physically closer together. Public transport was put in place to allow us to easily access activities in the days when few people had their own cars; today many people have access to a private car and the reasons for the original setting up of public transport have almost completely disappeared This is not to imply that public transport has lost its usefulness but rather that the public's needs have changed Some of the newer roles that public transport has to

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3   Remote learning here implies students studying from home in their metropolitan suburb rather than from out in the bush by radio as in the School of the Air With the advent of Computer Based Learning this is a viable alternative to travelling to school every day of the week

4   The proposed extension of the freeway and the rail system caused immediate pressure to release residential land well beyond the existing development front This extension of residential living is likely to aggravate the problems confronting public transport in Perth

5   Which will have minimal effects upon ridership and might well increase greenhouse emissions because of the inefficiencies of electricity generation and transmission Electric rail is not necessarily more greenhouse-friendly than diesel buses - it all depends on the primary energy source for electricity (River & Kenworthy, 1992) and the level of patronage

6   Very efficient at servicing the CBD during the peak periods but of limited use during off-peak or for servicing non-radial routes

fulfil are to ameliorate congestion, reduce vehicle generated pollution levels, service the transport disadvantaged - all new tasks that were not envisioned in the beginning However, many public transport agencies have not taken these new goals sufficiently on-board, let alone looked to the future and to what their goals will need to become but are rather still looking at goals such as increased efficiency and effectiveness. Goals that would have existed 90 years ago and have very little validity today or in the future.

Why They Failed!

The only reason some people get lost in thought
is because it is unfamiliar territory

Paul Fix

There are many examples in the marketing literature of companies that went bankrupt because their goals were all wrong Public transport providers might well be of the same mould as those corporate dinosaurs, trying to sell the wrong product to the wrong people and losing the race (See the seminal paper by Levitt (1964)) Even if all the 'correct' sums are done, such as environmental, external and human factor accounting, public transport might well still be shown to run at a 'loss' This, if true, is *prima facie* evidence that public transport is a failing business and should be radically restructured.

Transperth is recognised as one of the most efficient public transport utilities in Australia. This is something to be very proud of. However, to be the most efficient provider of an un-needed or ineffective[7] service would be a dubious honour, if you are supplying services that are awkward to use, don't get people to where they want to go without a lot of trouble and wasted time, are not convenient to use and are a drain on the public purse

Public Service Myopia

The human mind treats a new idea the way the
body treats a strange protein; it rejects it

P B Medawar.

There is a form of myopia in the public service that can easily cause major problems. Each government department or instrumentality has its own turf and will not move outside of its narrowly define area We mentioned before that public transport should be looking at teleworking and telecommuting; however, that would be perceived as a communications initiative and nothing to do with public transport. Given that there is no State Department of Communications, it has been left to the Department of Transport, in WA, to raise the issue (Transport Strategy Committee, 1992) We mentioned land use and urban planning; however, that is often seen as the Department of 'urban planning's' arena and nothing to do with public transport We talked about remote learning; again nothing to do with public transport, that's Education It is this 'head-in-the-sand' or

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[7] Ineffective implies in this context, a service that does not take people to where they wish to go. There is contention in Perth because of the lack of intra-boundary bus services Currently services feed into and out of the CBD; not much use if you want to move in a non-radial manner.

Ostrich like attitude that ensures that we do not achieve what is achievable It should be stated here that this attitude is not limited to public transport but is rather a near universal problem within the public service

There are a large number of services, supplied by governments and other public service agencies, which are taken for granted but some of which are, in reality, no longer needed[8] - is public transport (at least in its present form) one of these services? It may now be the time for the public and government to re-evaluate services that governments currently provide and should provide In a population which exhibits very high levels of private car ownership, is a public transport system an anachronism? A closer look at the public transport system and the functions it serves is required

Simple Solutions

We are continually faced with a series of enormous opportunities brilliantly disguised as insoluble problems

The annual Transperth deficit is approx $120 million and these funds are applied to servicing approx 120 000 patrons of which approx 40 000 are students The government purchases 40 000 bicycles (and helmets) at $250 each and gives them to these students; cost $10 million Next the government buys 80 000 small motorcycles at $2 000 each and gives them to the remaining 80 000 patrons; cost $160 million Total cost to eliminate the public transport system and those $120 million deficits, forever; is $170 million. Annual cost to maintain the system would be in the order of 4 000 bicycles and 8 000 motorcycles for a total cost of $17 million Don't be sucked in by these very favourable figures, they are obviously wrong. How do you determine, in subsequent years, who deserves a bicycle or a motorbike? However crazy this particular example may be, these types of analyses should be performed but they never are

Responsibilities

The politics of the world is too serious a business to be left any more to politicians
Spectator 1970

We need to constantly reappraise the responsibilities of government and other public utilities There is a general tendency to continue performing functions that have been performed in the past and to fail to evaluate alternatives or to attempt to determine if the services offered are still required. According to Drucker (1969), the inability to stop performing actions currently being performed and performed historically is the most destructive disease of government; the notion of change is always a threat and is thus resisted in the strongest terms As Allison (1971) has said, 'the bureaucracy does best

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[8] It was not so long ago that sanatoriums for those with Tuberculosis were prevalent and government funded TB disappeared, but it took quite a while for the sanatoria to go The same may be true of certain forms of public transport We need to analyse, very carefully, the services that public transport is supplying and to discover if those services are still needed and if they are can they be fulfilled in some other cheaper more efficient or more effective manner

tomorrow what it did yesterday', and as Sir Geoffrey Vickers (1970) said:

> the past is no longer a confident guide to the future, and despite the loss in validity
> of old assumptions, there is great anxiety and little inclination to extend learning
> beyond what is widely termed linear thinking

So old and outmoded methodologies and mechanisms may be applied again and again, failing to supply what is needed and necessary We live in a time when many useful discoveries are accidental (ie errors in the application of the traditional techniques) rather than the application of systematic thought and effort These facts are universally recognised and accepted and yet we refuse to rethink the way we perform and what we perform And to top it all, we have the audacity to state, "Lemmings are Suicidal"

But People Won't Do It Anyway....

A good idea is the enemy of a better one
You stop looking for alternatives
T Rickards

New ideas are often dismissed on the basis that 'the market won't accept it' We can even 'demonstrate' with models that they won't work

This implies an inability to adapt and change, yet one of the distinguishing features of the human race is precisely its ability to adapt, of its own volition, when faced with changed circumstances Simply, we under-rate ourselves and our fellow human beings

Even monkeys are capable of major behavioural changes!

THE HUNDREDTH MONKEY

"The Japanese monkey Macaca fuscata has been observed in the wild for a period of 30 years

In 1952, on the island of Koshima, scientists were providing monkeys with sweet potatoes dropped in the sand The monkeys liked the taste of the raw sweet potatoes, but they found the dirt unpleasant

An 18-month old female named Imo found she could solve the problem by washing the potatoes in a nearby stream She taught this trick to her mother Her playmates also learned this new way and they taught their mothers too

This cultural innovation was gradually picked up by various monkeys before the eyes of the scientists Between 1952 and 1958 all the young monkeys learned to wash the sandy sweet potatoes to make them more palatable

Only the adults who imitated their children learned this social improvement Other adults kept eating the dirty sweet potatoes

Then something startling took place In the Autumn of 1958 a certain number of Koshima monkeys were washing their sweet potatoes - the exact number is not known

Let us suppose that when the sun rose one morning there were 99 monkeys on Koshima Island who had learned to wash their sweet potatoes

Let us further suppose that later that morning the hundredth monkey learned to wash the potatoes THEN IT HAPPENED!

By that evening almost everyone in the tribe was washing sweet potatoes before eating them

The added energy of this hundredth monkey somehow created an ideological breakthrough

But notice A most surprising thing observed by these scientists was that the habit of washing sweet potatoes then jumped over the sea

Colonies of monkeys on other islands and the mainland troop of monkeys on Takasakiyama began washing their sweet potatoes"

Source: Keys (1984)

Although many have tried to debunk the specifics of the hundredth monkey story, the principle lives on Other work has even suggested scientific experiments which could be used to demonstrate its existence (Sheldrake, 1983)

..... **And If We Don't Try, We Won't Find Out!**

Acknowledgement

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