

## Urban trees: Growth constraints and protection

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### 高中通識教育科知識增益系列課程: 可持續發展的城市生態

#### 樹木營造綠意盎然的都市

1. 樹木對綠化都市的益處及作用
2. 樹木在城市生長的限制及保護

## **Urban trees: Growth constraints and protection**

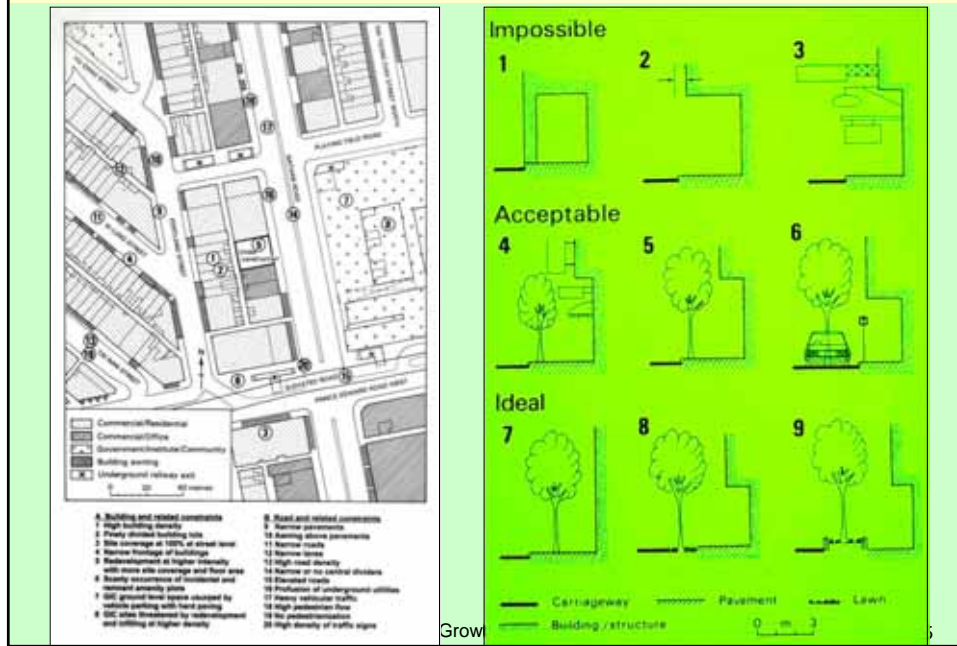
1. Introduction
2. Early tree-planting history
3. Notable tree losses and fatal collapses
4. Site limitation and degradation
5. Species selection and planting material quality
6. Soil and rooting constraint
7. Paving and grade change influence
8. Construction impact and vandalism
9. Tree care
10. Tree transplanting
11. Conclusion

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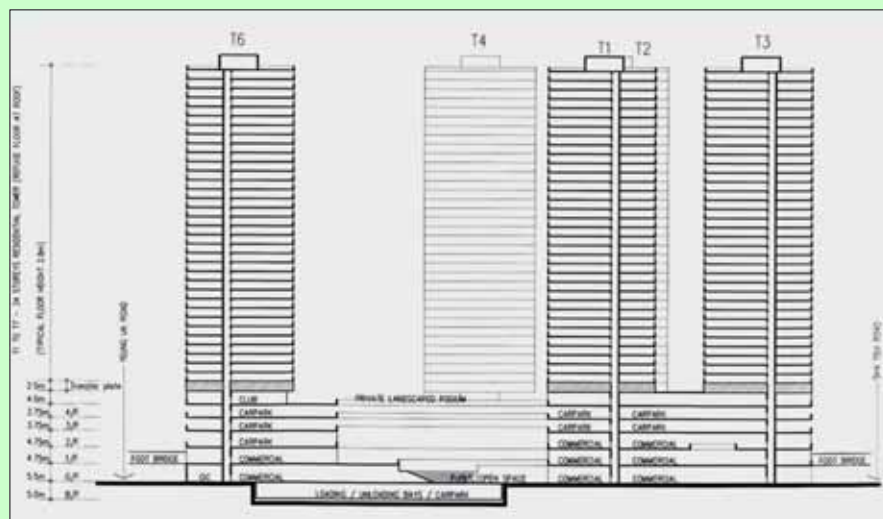
## **Compact city development mode**



## Tight urban fabric



## Massive podium and high site coverage



## Accelerated tree decline and management burden

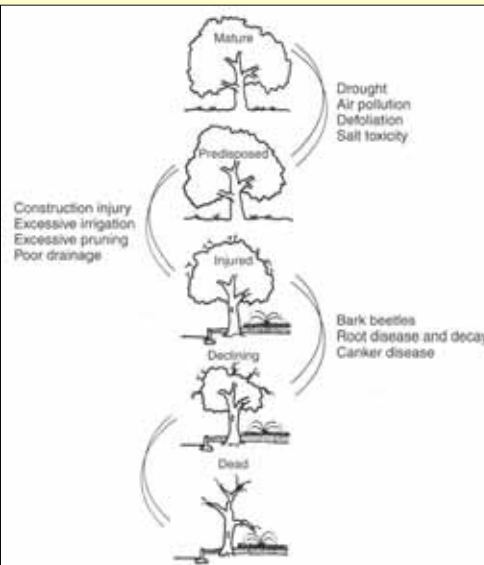


Figure 2-36 Trees often die from a series of linked events. A mortality spiral describes the tree's transition from vigorous to stressed, from stressed to injured, from injured to declining, and from declining to dead. At each stage:

C.Y. Jim: Urban Trees: Growth Constraints and Protection

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## Wisdom of Confucius

孔子  
《論語》  
《為政》

視其所以 觀其所由 察其所安

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## Wisdom of Liu Zong Yuan

### 柳宗元 《種樹郭橐駝傳》

順木之天 以致其性  
其本欲舒 其培欲平  
其土欲故 其築欲密

## Learning from the past

Spanish-born philosopher and critic George Santayana (1863–1952) once said in an enduring epigram that

**“Those who cannot remember the past are condemned to repeat it”.**

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## Roadside tree planting tradition



Central

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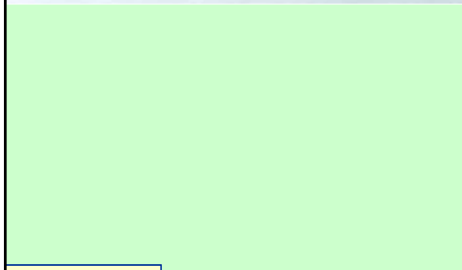
## Generous tree planting



QRE and Bonham Rd

C Y Jim: Urban Trees

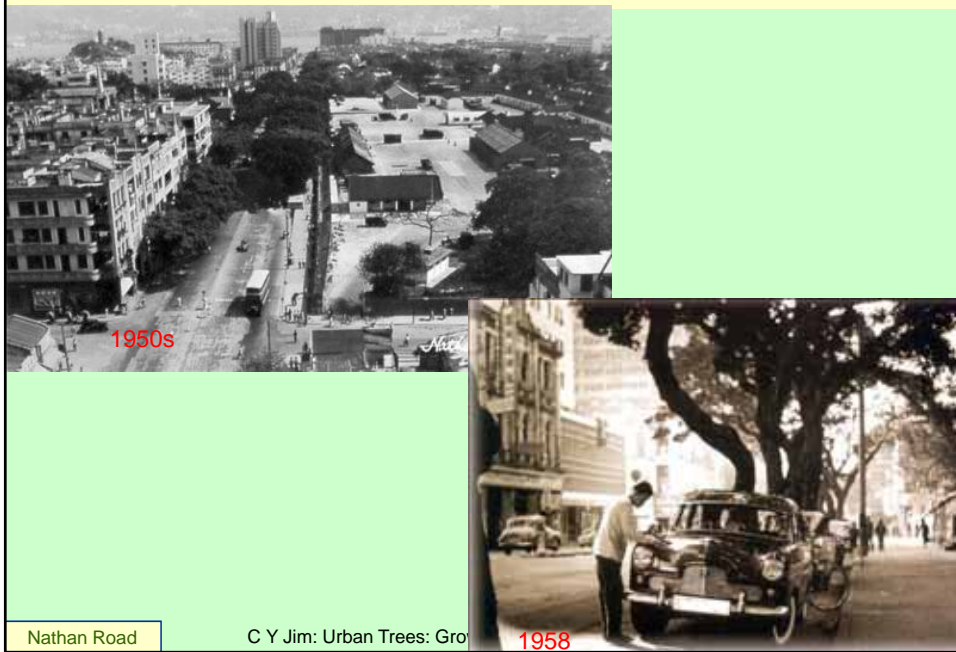
## Blissful and halcyon beginning



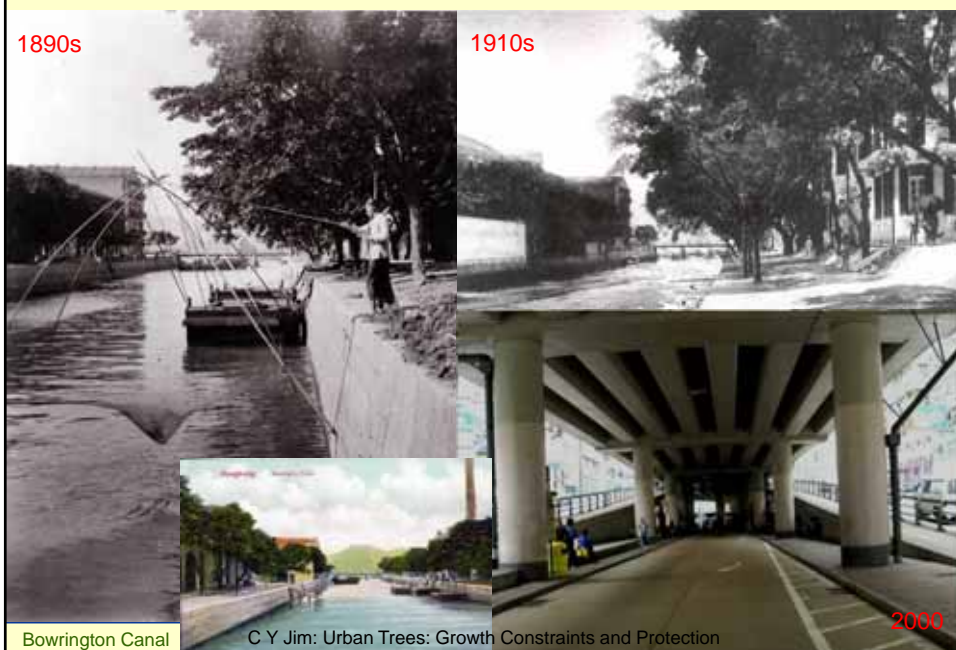
Nathan Road

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## Early development impacts



## Loss of planting site



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### Battery Path tree collapse 2010



## Alarming loss of champion trees



## Heritage trees under stress



Nathan Road

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## Brown root rot disease attacking weak trees



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## Abused trees can kill 2002



Kadoorie Avenue

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坡缺樹木知識

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## Stanley tree collapse 2008: *Erythrina variegata*

Registry of Old and Valuable Trees  
Arboreal and Cultural Resources Department

Old and Valuable Tree Information

General Information	Tree No.	0201-011
Registration No.	Date of Photo Taking	2007-08-07
Maintenance Department	Location	LCSD
Remarks	Remarks	Outside Sun Wing L&L, Stanley
Tree Status	Tree Status	Tree of the Year (2007-08)
Tree Species	Tree Species	0201-011
Tree Height	Tree Height	22 (m)
Tree Diameter	Tree Diameter	18 (cm)
Tree Age	Tree Age	1 (year)

Other Search: [ ]

Location: [ ]

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Stanley Coral Tree Collapse

CY Jim: 2008-08-07

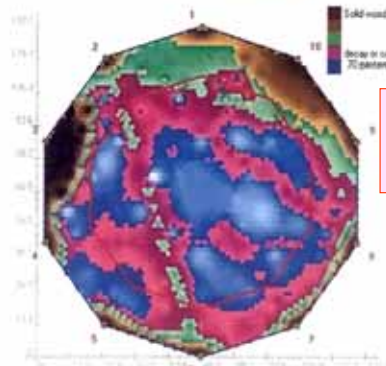
## Stanley tree collapse 2008: *Erythrina variegata*



Oriental News

## Stanley tree collapse 2008: *Erythrina variegata*

Tomograph detected on 4.3.2008



About 6 months before the incident, the tomograph detected 70% of decay or cavity with an eccentric location, which indicated tree hazard

Stanley Coral Tree Collapse

## Shatin tree collapse 2010: *Peltophorum pterocarpum*



The tree has an unusually small amount of foliage with reference to its 20 m height, indicating that it has lost a notable proportion of its crown and is under stress

Lam Tsuen tree collapse 2012: *Ficus microcarpa*



Robinson Road tree collapse 2014: *Ficus elastica*



C Y Jim: Love

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## Unfriendly development intrusion



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## Degradation of site quality



## Unsympathetic development impact



## Inadequate growth space and excavation damage



## Large tree planted too close to kerb



## Mismatch between species and site geometry



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## Inadequate headroom



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## Inferior planting materials



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## Wrong species at wrong site



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## Wrong species at wrong site



## Improperly protected trees in construction site



## Poor quality planting material



## Poor quality planting materials



## Poor quality planting material and wrong species



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## Poor soil and poor root growth



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## Common occurrence of soil compaction



Cyberport

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## Construction rubble in planter



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### Tiny tree pit and limited root spread



### Tiny container of wrong size and shape



## Excessive paving and root confinement



## Excessive paving and root confinement of mature tree



## Excessive paving and tiny tree pits



Tai Po Centre



with C

## Excessive paving and tiny planter of large OVT



Dragon Terrace



## Wrong species for tiny tree pit



C. Y. Jim: Love and Lore of Banyans

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## Confinement in tiny tree ring



Buddhist School, Shan Kwoi Yuen, Can Trees Grow in Containers and Protection

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## Excessive paving



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## Misguided growth space design



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## Narrow planter with large trees



## Large tree in tiny shallow planter



## Tiny planter for large tree



## Tiny planter for large tree



## Unsympathetic road work



## No protection from roadwork damage



## Soil compaction in tree protection zone



## Root severance before toppling



## Root damage due to root inspection pits



## Soil cultivation damage of roots



## Soil erosion and root exposure



Tak Wah Park, Tsuen Wan C Y Jim: Urban Tree Growth Constraints and Protection

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## Harmful grade raising



## Grade raising & excessive paving



## Confined planter and raised grade



## Unnecessary repaving and root damage



## Unnecessary repaving and root damage



## Excavation and paving adjacent to champion tree



## Grade raising & excessive paving



Kowloon Park



## Grade raising & excessive paving



Kowloon Park

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## Delayed failure



## Excessive paving of champion tree



## Excessive paving of champion tree



## Grade raising & excessive paving



## Excessive paving in village



## Excessive paving in village



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## Trenching damage



C

on

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## Trenching damage



## Deleterious tree preservation



## Planting site preparation injuries



## Construction damage



## Preservation = Topping = Killing



## Multiple mistreatments of preserved large tree



## Wholesale tree felling in development site



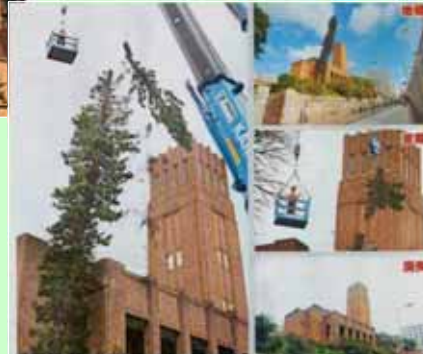
## Construction conflict



## Tree felling 2009: *Araucaria heterophylla*



Maryknoll Convent School



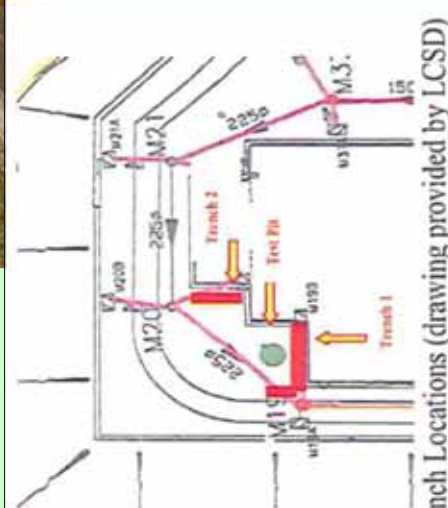
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## Tree felling 2009: *Araucaria heterophylla*



Maryknoll Convent School



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## Tree felling 2009: *Araucaria heterophylla*



## Wholesale fung shui woodland removal



## Compaction and sealing of slope



Rutonjee Hospital

## Unsympathetic slope stabilization



Aberdeen Main Road

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## Vandalism (burning trees)



## Prolonged abuse of wishing tree



## Vandalism and misuse



## Vandalism injuries



## Tree theft (*Aquilaria sinensis*)



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## Tree tie and tree guard injuries



## Metal tree tie girdling



## Barbed wire embedded by trunk growth



## Unprofessional tree care leading to grave tree problems



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## Earth filling and planting at tree base



R

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## Tree propping overkill



Clarence Terrace

## Destructive topping and killing of healthy tree



## Wholesale destructive topping in Central



## Wholesale topping in public housing estate



Leung King Estate, Tuen Mun

Jim: Urban Trees: Growth

## Wholesale topping in YMCA camp



YMCA, Wu Kwai Sha

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## Wholesale topping in private residence



Lascar Court



## Wholesale topping in school



Yuen Long True Light School

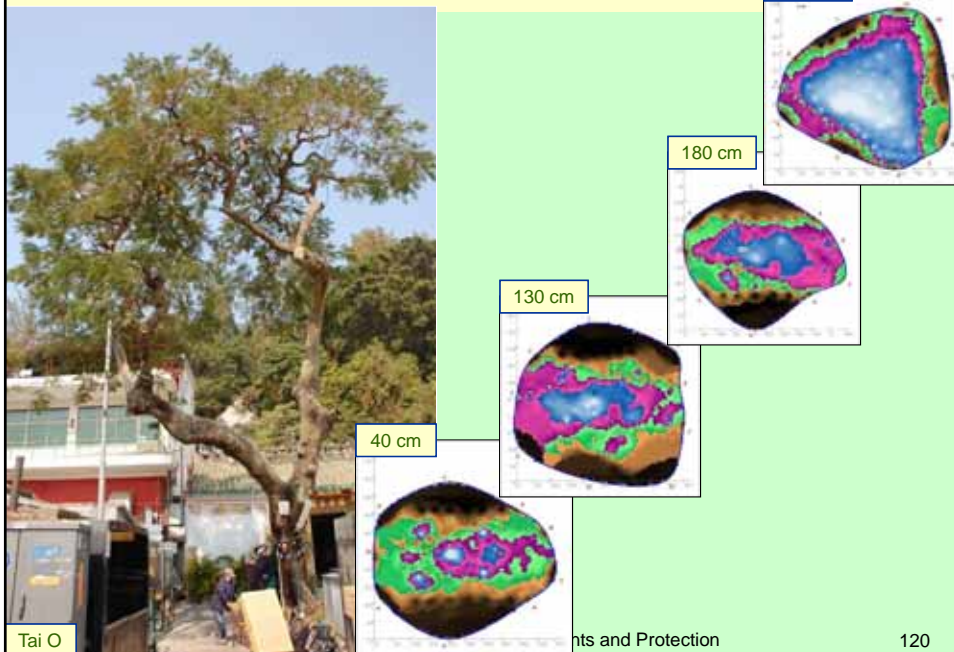


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## Wholesale topping at roadside



## Tree decay detection



## Termite infestation



## Typhoon damage



## Harmful tree prop design



## Proper tree prop design



## Improper pruning and branch removal



## Tree with twin stem



## Tree with crowded branching



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## Conflicts with urban facilities



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## Abuse or misuse of trees



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## Excessive and repeated pruning



Admiralty

## Excessive and incorrect pruning



## Remedial measure overkill



## Unsympathetic and unsightly wall stabilization



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## Dismal tree transplanting practice



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## Wholesale topping before transplanting



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## Substandard tree transplanting



## Substandard tree transplanting



## Tree transplanting = Tree massacre



## Substandard tree transplanting



## Holding nursery or graveyard for transplanted trees



## Grossly substandard transplanting



## Grossly substandard transplanting



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## Lingering tree-growth constraints

84 這和不知道樹木與城市發展之間常見的衝突早在1880年代已經存在？



以下一位令人信服的歷史文  
字曾森森政府植物及林務部監督  
Charles Ford於1883年5月  
22日向立法局提交的報告中，  
就樹木與城市發展的事，但  
從今日兩難具他能力，他則明確  
市發展對行商與地產造成破壞，  
該報告和這項多獲佔了樹木的生  
長空間；更嚴重的，他還指出  
與建築商談判時所費及路中因樹  
木足夠的樹木空間，其中包括供  
海地區的商舖，難以收地城市  
特色。如此有先見之明的建議，  
實在值得稱頌和嘉許。讓大  
家從其中所關注的要點：可發現

120多年後的今天，我們仍然是  
們家關心這件事情。

「71.除了各種樹木的種類和  
樹木的數量之外，本部門所管理  
的樹木總共達3,600株。每株一  
般約相鄰30呎。主要為橡樹。  
這些樹木是以平均的30呎距離  
排列，即可構成一條10呎寬的  
林蔭道。它們每年每年兩次，  
以固定程序定期生長，不致於  
干擾地產發展，以及不致妨礙  
道路的交通。本人很遺憾地告知各  
位，可能是因為缺乏資源，或是  
樹木的種類原因，樹木之大樹

每年都大量減少。多年前，本  
部門所管理的樹木大樹被砍  
除。至今則更甚。本人亦於  
1873年在海濱道 Moorson 的  
樹木下栽種在海濱之家至東邊街  
交界處一株樹木的遺骸大樹被  
砍。於當時亦已「遺失」，城市  
中其他地方亦是如此。在街道兩  
的行人道上種植樹木時，樹木僅  
有的生存空間也被完全佔佔，有  
礙於在建築物和樹木之間的空間  
正常發展更空間。本人建議，  
假如可能的話，在鋪設新街道之  
際（例如新填地的填海工程），  
應預留足夠的寬度，以適應樹木

種植樹木之用。若進行海濱道擴  
建，則可考慮在海濱道和中環  
樹木一側樹木。在靠近海濱道面的  
樹木不能良好生長。在路的對  
面，它們將會對房屋造成威脅。  
然而，如果海濱道加闊，道路中  
央則更可能對樹木生長。

72. 由於樹木只應向內  
道中央的一邊生長，其中許多只  
有在當地的樹木的數量傾向一  
面，於夏日時，應加種植直  
立的樹木，多株以結構方式生長  
的大樹或成不成和也對地被選  
出及重新以直立方式種植。部分



真知灼見 溫故知新

## Lingering tree-growth constraints

4 這和不知道樹木與城市發展之間常見的衝突早在1880年代已經存在？



樹木亦已消失。目前尚有大量樹  
木應以同樣方法處理。應每年完  
成部分，並以同樣程度重新的  
開始。」

我們知道納維爾和福特  
先生的貢獻有甚麼價值和實  
行，我們便可知道納維爾和  
福特。試想像，120年堅持不  
懈，貫徹始終地進行綠化，可以  
造成何等景象？時至今日，新  
的樹木仍回響不斷。預計會在  
未來的歲月裡持續不息。過去其  
實就是創造未來嘗試的開始，人

們亦知，納維爾和福特的智  
慧，曾使城市更進步，且多已無  
過去，一去不返，但能成為客觀  
的教訓，讓人們從此改善。那就  
讓我們回到歷史中的美好部分  
與當地環境，使香港市民和旅客  
體驗到香港的訪客得以愉快地享  
有一個真正綠色而美妙的國際都  
市。

真知灼見 溫故知新

## Prospect for a greener Hong Kong



## Quality of tree workers and tree work



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## Wisdom of Laozi



老子  
《道德經》  
第五十八章

禍兮福所倚  
福兮禍所伏



The End  
Questions and Comments  
are Welcome