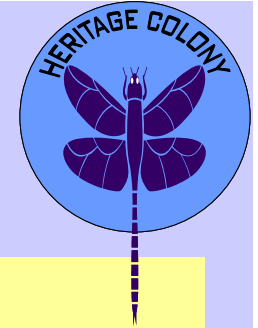




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Anthropogenic land use patterns in the Malay peninsula during the British colonial era

Nor Rasidah Hashim

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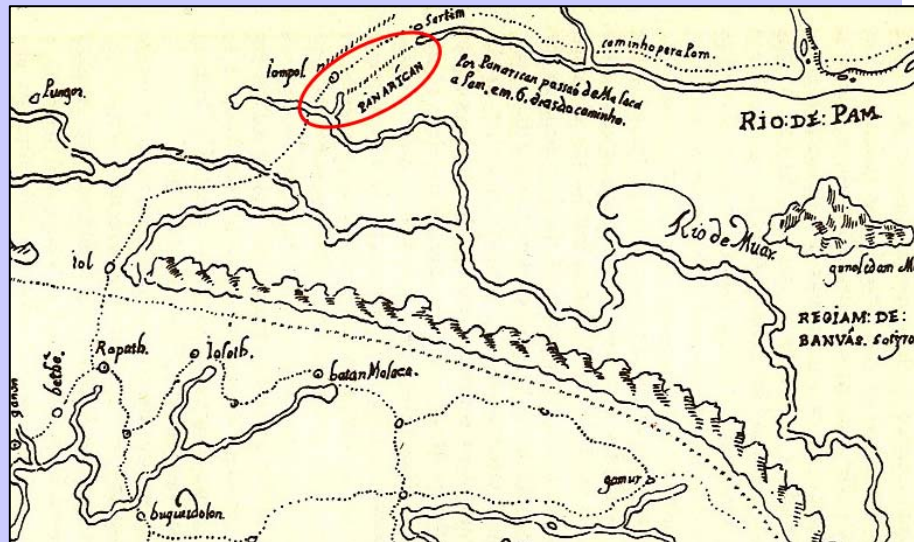
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Study background & objective

- Using GIS to analyze the colonial land use/ landscape changes in the Malay peninsula in the early half of the 20th century (1907-1938).
- Our case study focuses on the British period before and through WW1 and right before WW2, i.e., a mature phase of British rule in the peninsula.
- Initial expectation: Some land use especially forest clearing and agriculture in the peninsula's inland area but did not know specifics.
- Approach was exploratory (Just do it!).
- Research started in 2007.

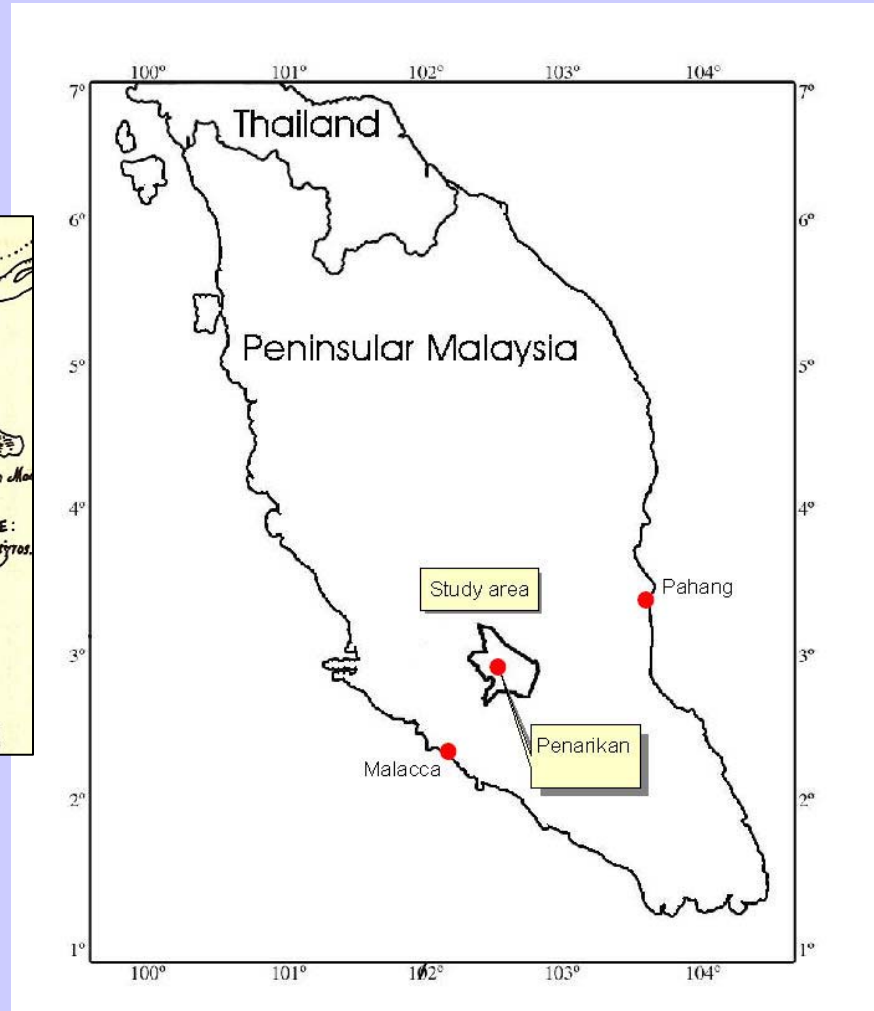
Methods

Study area



Map by Godinho de Eredia, 1613

Important in ancient trade



Historical Database of Penarikan

- Between 1519 – 1613 there were at least **53 maps** depicting the transpeninsular route / river. But only de Eredia's 1613 map got it right, i.e. showing a land portage (Wheatley, 1961).
- The last **written** record of a transpeninsular trip using Penarikan was by Daly (1875).

JOURNAL OF A ROUTE OVERLAND FROM MALACCA TO PAHANG,
ACROSS THE MALAYAN PENINSULA.*

By Mr CHARLES GRAY.

January 2nd, 1827.—At 9 o'clock A.M. left Malacca for Pahang.

At 4 o'clock we arrived at Jompol, and remained at the master of Customs' house, whom I found to be obliging and attentive. I am informed that all the Pahang traders and other passengers stop at his house on their journey.

At Jompol there is a large tin mine, but it is little worked owing to the indolence of the Malays; sapanwood, dammer and rattans, and likewise paddy, are to be had here in great quantities.

The produce of the place is forwarded by the River Moar to Padang and from thence to Malacca.

Jompol was the last stage of my journey through the interior to Pahang by land.

8th.—Heavy rain to-day, could not leave the settlement of Jompol. During this month it is cold with heavy rains. Here I purchased a boat to proceed to Pahang.

9th.—Left Jompol with 9 men well armed for Pahang. The river of Jompol is formed by the water falling from the different mountains in the interior.

After going down the river Jompol for nearly one hour, I was obliged to cross overland with my boat and goods for nearly 300 yards, to fall in with the river Sirting; which leads to the lake of Brah, and the river Brah, the whole of which falls into the great river of Pahang. On the banks of the river Sirting, which is near Jompol, is the dwelling of the Rajah, who begged me to remain one day with him; but desirous of reaching Pahang as soon as possible, I declined availing myself of his kindness. To the Rajah for his attention in procuring me kajang, fowls, and other necessary articles I feel extremely obliged. I have been informed that the Rajah of Jompol has little or no power as a Rajah. The ruling power seems to be entirely vested in the Panghulu.

From the river Jompol, one may reach Malacca in 8 days by the river Moar.

At Jompol, there is a small gold mine, from which the Rajah derives no profit; as the miners will not be subject to any sort of duty. At 10 o'clock left the Rajah and proceeded down the river Sirting towards Pahang. At 11 o'clock we had heavy rain, which lasted until 6 in the evening. Remained during the night at a small settlement called Bahru, near the banks of the river Sirting.

10th.—This morning we had heavy rain, and could not proceed down the river until 11 o'clock. At night remained on the banks of the river Sirting.

11th.—Left the banks of the river at $\frac{1}{2}$ past 5 o'clock, no rain to-day. At this time of the year, there is plenty of water in the river Sirting, on account of the heavy rains which fall in the months of November, December and January.

On the banks of the river Sirting, there is excellent timber, with dammer and rattans, in great plenty.

II. (Extract from Mr. Daly's Journal during the crossing from Ulu Muar and Jompol to Pahang, 1875.)

"August, 16th.—Unable to persuade any one even to help us in getting the boat under way, we started on our journey to Pahang. The party consists of O'Brien, the three police and myself—and provisions for 10 days, viz: rice, tea, a few tins of sardines and powder and shot—relying upon shooting a few pigeons now and then for fresh meat."

"At starting from Kwala Jompol had great difficulty in getting the prahu over the sandy bars, and, though the distance from the Kwala up the River Jompol to the place where the boats are taken overland at Penarri is only about 1 mile, we took over three hours dragging the boat. It is a very narrow stream, choked with fallen timber and sand banks overhanging with the much dreaded thorns, called "unas" by the Malays, that resemble tigers' claws and tear everything they lay hold of. Nearly all the time we were in the water dragging the boat along."

"On arriving at Penarri we took everything out of the boat and carried the things across to the River Ilir Seréting, and in the evening we managed to get fourteen men at ten cents a head to pull the boat across the dividing land from River Jompol to River Ilir Seréting. I measured the distance from one river to the other,—it is 24 chains or a little more than a quarter of a mile; There is a rise of 25 feet from the river bed up the first bank, and we were a long time pulling the heavy boat up to the level land. Long bamboos were lashed to the fore thwart of the boat and all hands hauled at the bamboos—the knots on the bamboo giving good holding power. It was a fine moonlight night and the excitable Malays worked with a will, making a great noise.

"When we had got the boat across, after two hours' work, and safely deposited in the other river, I sent up a couple of rockets to their great delight and paid them. Gave quinine to a great many who had remittent fever and ague.

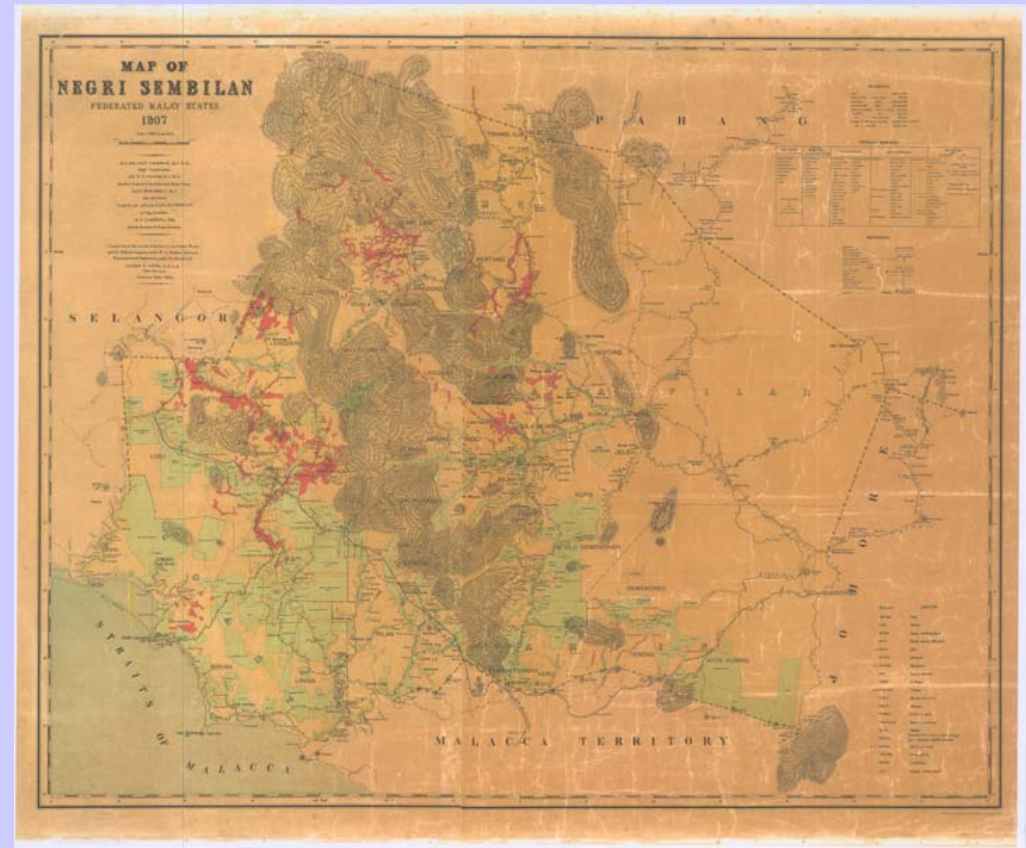
"It is a great relief to have got so far, and away from the Kwala Jompol people who are foolish and suspicious from ignorance, and who were threatening mischief.

Methods

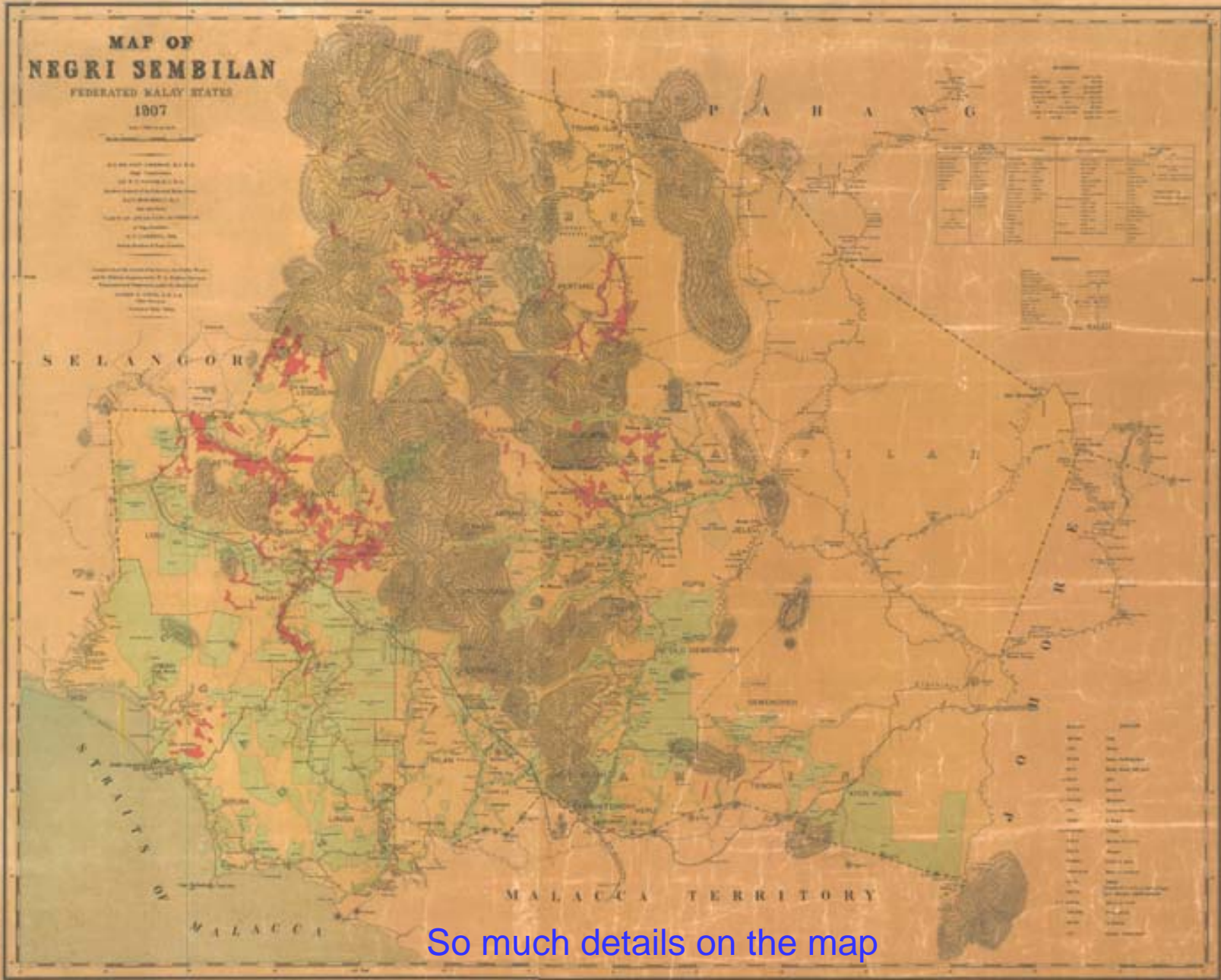
1907 Map

LEGENDS

- Railways
- Metalled Roads & Paths
- Cart roads and paths
- Rivers & Streams
- Trigonometrical stations
- Hills Fixed by Intersection
- Alienated land ... agricultural
- Alienated land ... Mining
- State boundary
- District boundary
- Town boundary
- Rest houses
- Halting bungalows
- Police Stations
- Telegraph & Telephone stations
- Mukims (*subdistrict*)



**MAP OF
NEGRI SEMBILAN**
FEDERATED MALAY STATES
1907



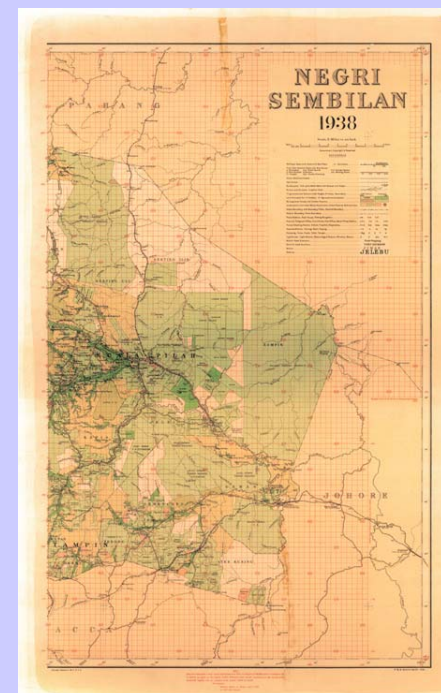
So much details on the map

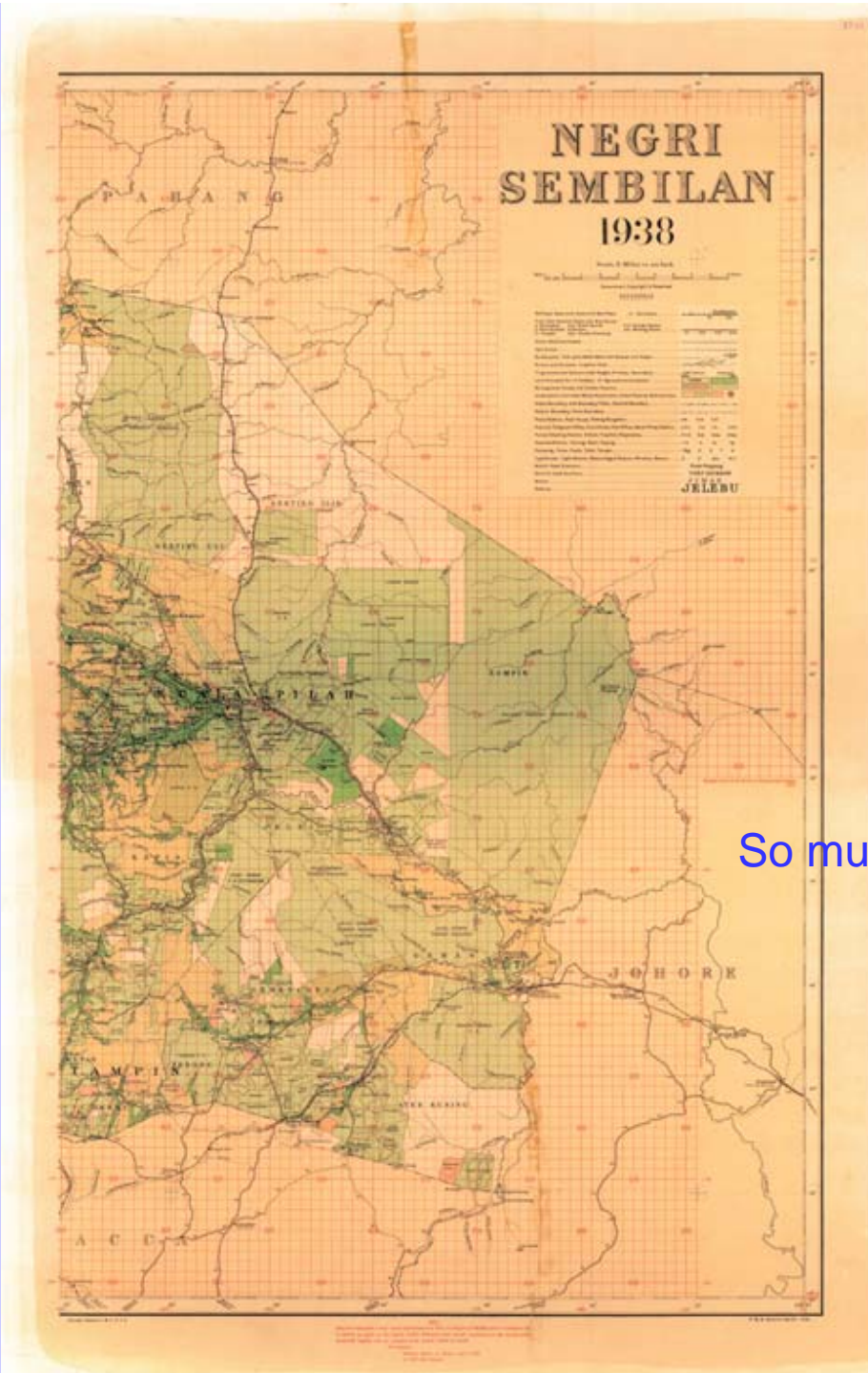
Methods

1938 Map

LEGENDS

- Railways
- Other Metalled Roads
- Cart-track
- Bridle-path, Foot patch, Bench Mark with Number and Heights
- Rivers and Streams, Irrigation Canal
- Trigonometical Station with Height, Primary, Secondary
- Land Alienated for (1) Rubber, (2) Agricultural purposes
- Mining Land, Forest and Timber Reserve
- Unalienated Land within Malay Reservation, Other Reserve, Built-up Areas
- State Boundary with Boundary Pillar, District Boundary
- Mukim Boundary, Town Boundary
- Police Station, Rest House, Halting Bungalow
- Post and Telegraph Office, Court House, Post Office, Petrol Filling Station
- Forest Checking Station, School, Hospital, Dispensary
- Customs Station, Gunong (*mountain*), Bukit (*hill*), Tanjong (*cape*)
- Kampong (*village*), Pulau (*island*), Kuala (*river confluence*), Telok (*bay*), Sungei (*river*)
- Lighthouse, Light Beacon, Meteorological Station, Wireless Station





So much details on the map

Results

Landscape patterns

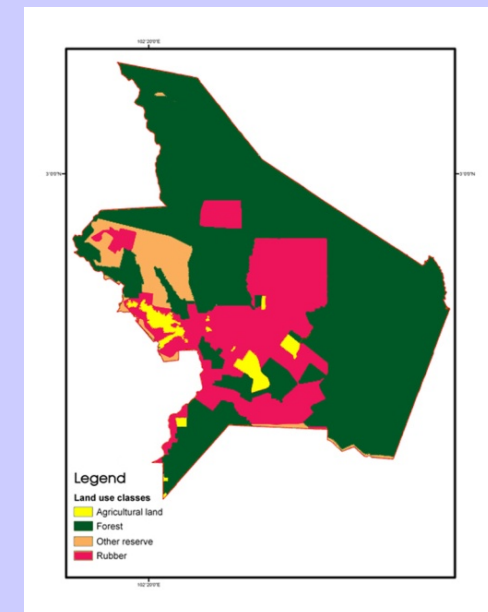
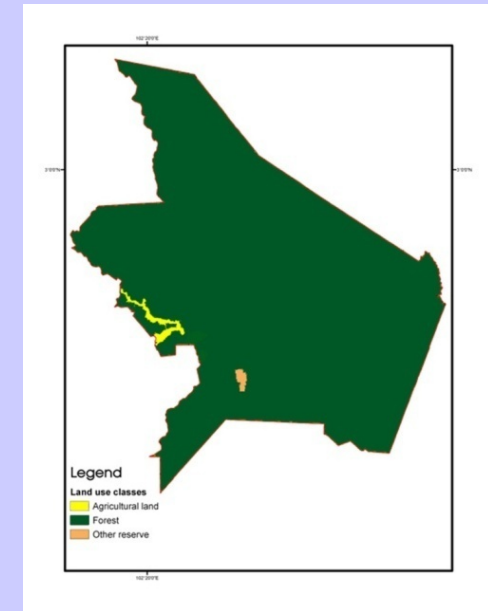
1907

- Study area was covered by as much as 98% forests and only about 1% of the land was used for agriculture and settlement
- The landscape was homogeneous with a patch density (PD) of 0.01 per km².

1938

- Forest area declined by as much as 32%.
- Former forested land had been converted into other land use types: ~23% had been converted into rubber plantations.
- The percentage of land use increase for Malay reserve (for village settlements) was (7%), Agricultural land (3%, all of which was paddy fields because they were located near rivers) and Other reserve (0.3%).
- As a result, the landscape began to be more fragmented, 0.06 patches per 1km².

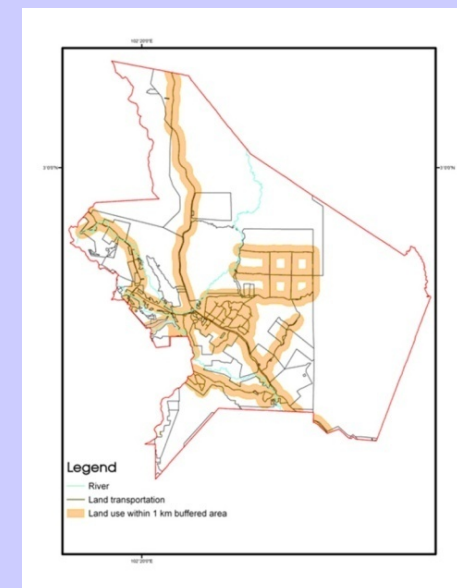
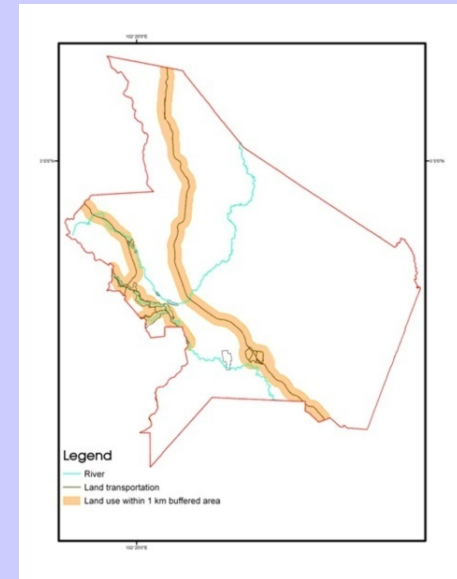
Moreover, 'unclassified' area increased from 1455 km² (a single large patch) to 355km² (seven separate patches of different sizes) from 1907 to 1938.



Results

Land transportation development

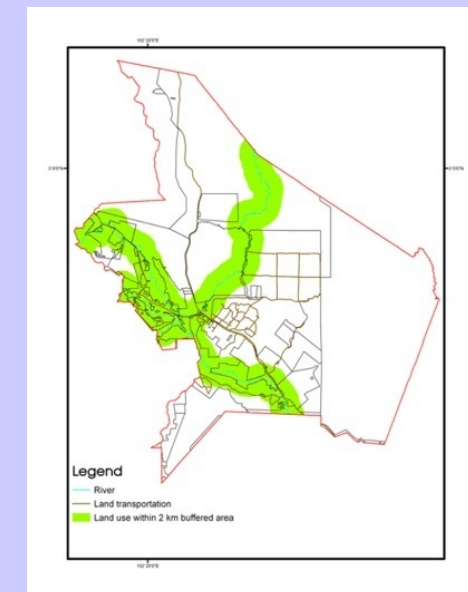
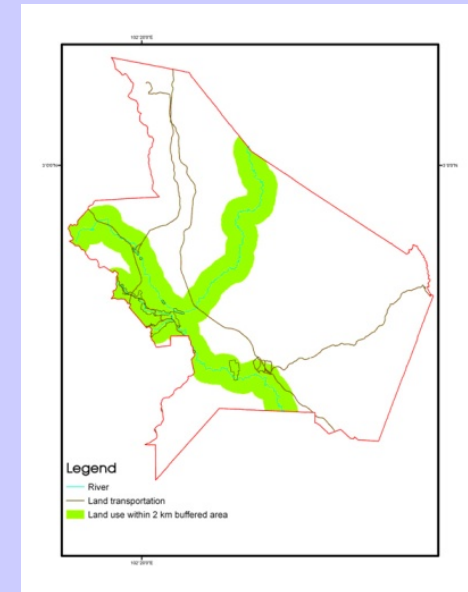
- In 1907, a total of 114km of land transportation networks compared to 272 km in 1938.
- In 1907, most of the land transportation networks were connected to forests. In contrast, in 1938, road/railway networks were mostly connected to rubber plantations, i.e., rubber constituted 55% of the area along road/railway networks .
- In 1907 there was no railway traversing the study area. In 1938, a railway (which was formerly a cart road in 1907) ran from the Gemas station in the southeast through the middle of the study area northwards towards Pahang.



Results

Landscape patterns within the riparian area

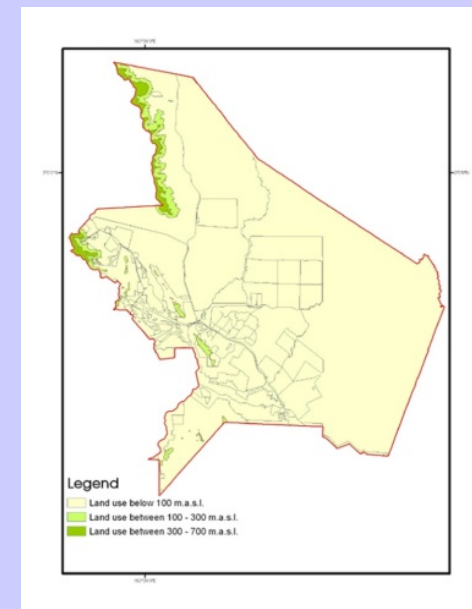
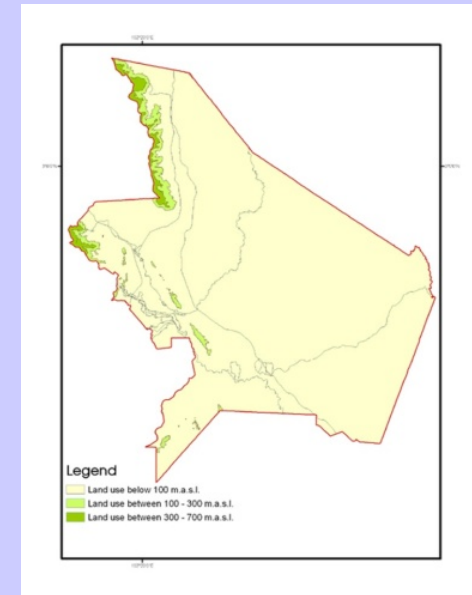
- In 1907, rivers were surrounded by forests (96% of land within 2km distance from each side of a riverbank) whereas paddy fields constituted some 3% of the adjacent land along rivers.
- In 1938, although most rivers were surrounded by forests, the percentage of forest had declined to 46%, because other land use types were established near rivers: rubber (31%), Malay reserve (16%) and Agricultural land (of mostly paddy fields had increased to 7 %).



Results

Landscape patterns against the topographic elevations

- Only 2% of land area was at high elevation.
- In 1907, large tracts of forests existed in the lowlands (<300m above sea level) as well as in the highlands (>300m above sea level).
- In 1938, forests in the lowlands had decreased by as much as 464km² or 32% but forest cover in the highlands was the same as before. This also meant that land use was mostly being conducted in the lowlands.



Results

Mapping records of the Penarikan land portage

- On the 1907 map the Penarikan site was indicated with 'Penari' but that the 1938 map was visibly silent on this historical site.
- The cause for this omission was unlikely accidental but rather was indicative of the site's diminished socio-economic and geopolitical importance in the twentieth century as roads and railways had become the main means of efficient transportation of people and goods.
- The 1907 map showed the land transportation networks around the site consisted of a single metalled road from the town of Kuala Pilah in the west to the village called 'Jamu Lapan', which was the Penarikan stop. This road then turned south towards the town of Tampin. If one were to continue the journey towards Pahang, one would have to travel some five miles towards Bahau station before travelling on a cart road to Pahang.
- In contrast, the 1938 map showed the metalled road had expanded all the way to Bahau station from Kuala Pilah as well as a railway connecting Bahau Station with other towns (Gemaspahang Station towards Singapore or Kuala Lumpur; Kuala Lipis Station in Pahang).



Some reflections

- The maps contain so much data but the spelling of place names were sometimes different from present ones but since I am familiar with this area not difficult to guess what they could be – but it also means the research is very personal and therefore exciting to me.

Discussion

- The forest-land use transformation took place rapidly in the relatively remote area in the southern part of the peninsula, in the early half of the twentieth century:
 1. In 1907, 98% of the area was unsurveyed (deep forest) but in 1938 only 24% of the land area was still unsurveyed.
 2. Land transportation increased from 114km to 272km over the same period.
 3. Along the main rivers, forests were cleared to make way for rice paddies, that is, two-fold increase between 1907 and 1938.
- Reason was by the end of the nineteenth century, “colonial modernity” was taking place as a response to increasing population & and increasing revenue (Harper, 1999). These socio-economic changes were making their impacts on the landscape as could be seen from the historical maps.

Conclusion

- These maps were thus an excellent record of the changing priorities of the British over time,

‘British possessions farther east were equally mixed in character. Burma, Malaya, Singapore, parts of Borneo and Hong Kong had been acquired for divergent reasons, many of which soon lost their force; but these colonies offered new advantages as they lost their original functions... Malaya, occupied to protect the trade route to China, became valuable for its tin and rubber...’(Fieldhouse, 1967: 288-9).

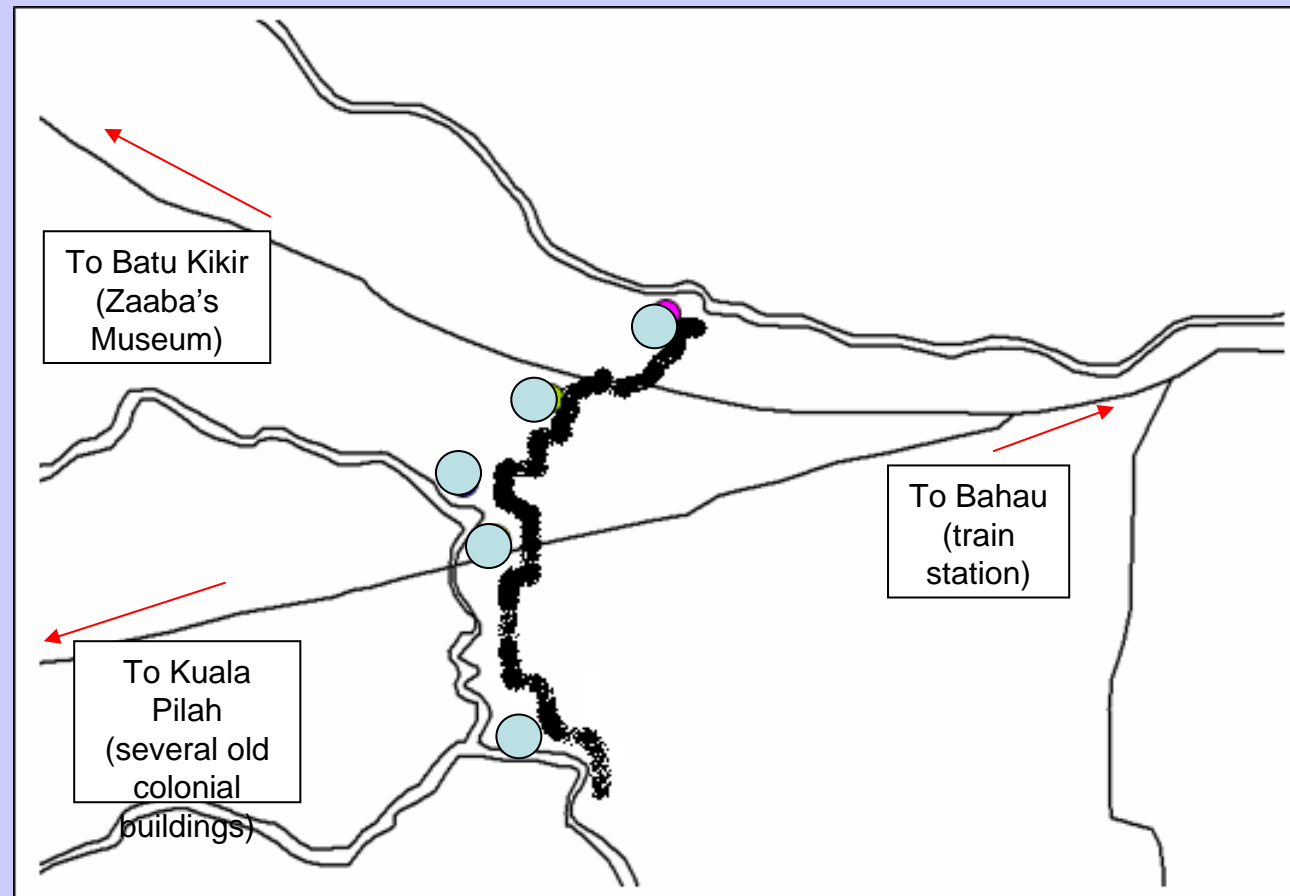
- We therefore conclude that the spatial analysis of old maps was very useful in quantifying these changes.
- We also believe and HOPE that historians would welcome the additional knowledge generated from our GIS map analysis because it augments the written records of the study area.

Concluding remarks

- Historical GIS in Malaysia is still very new (so we're looking for expertise).
- Exploratory stage (experimenting with different visualisation techniques etc. based on information on the internet, books; our study is still very "rough").
- Current disadvantage is no historian in our group (opportunity for collaboration).
- Funding is currently not generous.

Thank You

“Societies only attempt to conserve the things they value.”
(Pendlebury, 2008)



The Penarikan today and a possible heritage trail...

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