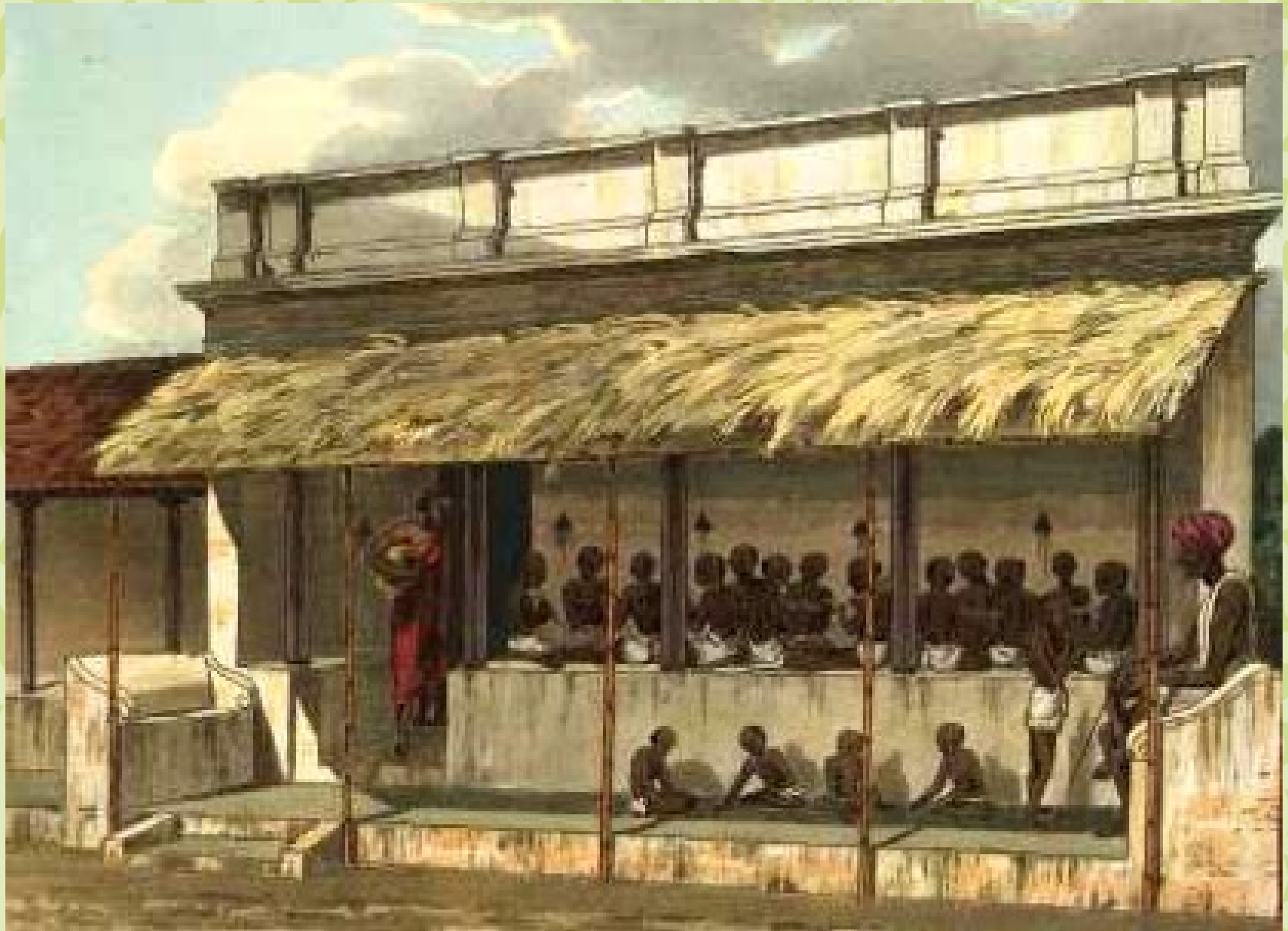


Learning Mathematics in Nineteenth Century South India

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South Indian *tinnai* school

The *tinnai* culture of learning numbers

- The curriculum had a local orientation and a strong sense of functionality
- A culture of learning that celebrated exposition of skill and competent performance in public
- Recollective memory was the primary mode of learning; here memory was not an aid in learning in the modern sense, but a different mode of learning in itself
- Like in case of mathematical tables which were organized as memory registers for numbers in different orders



Ponnilakkam, table of Tamil numbers

First Phase of the Encounter 1822-1854

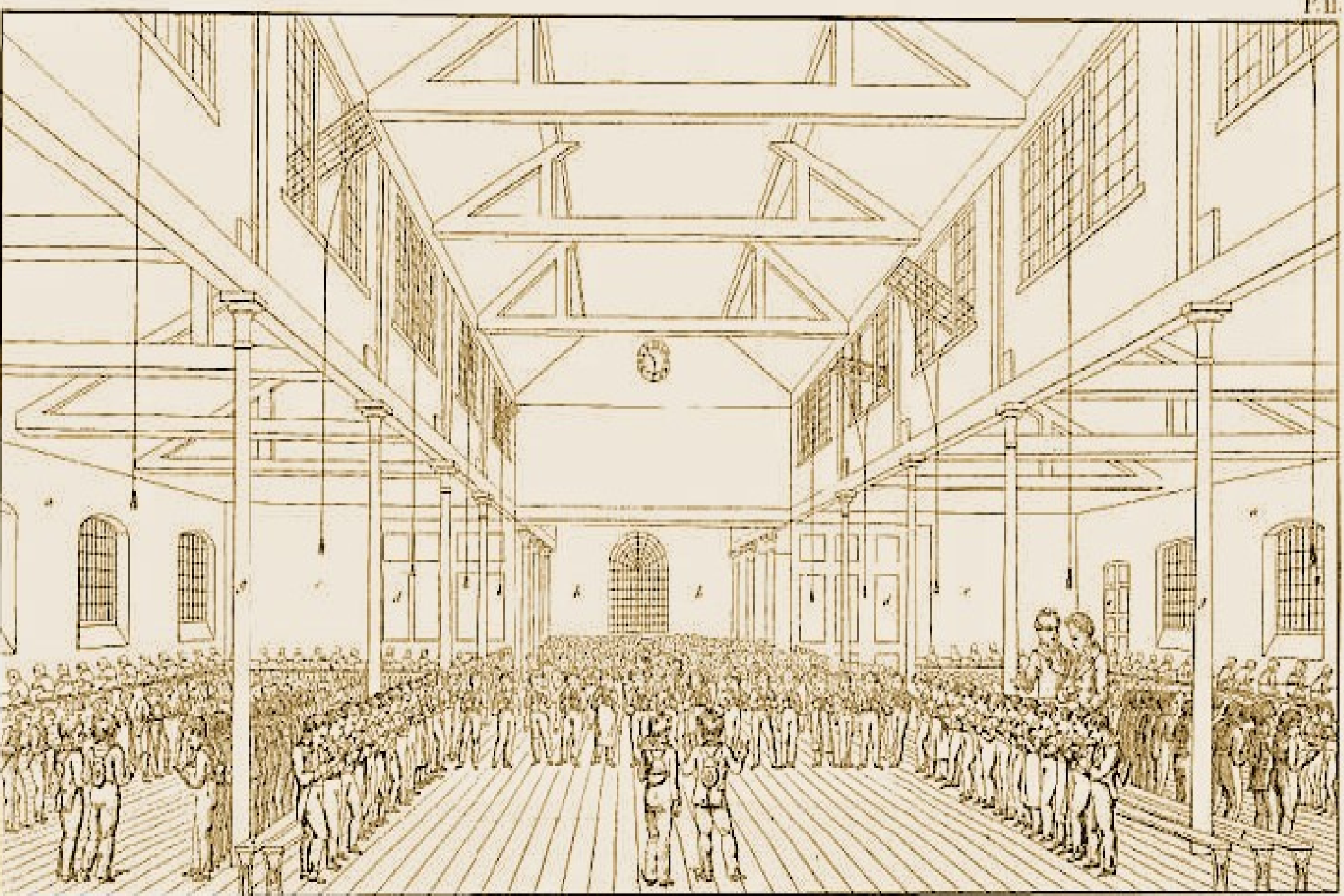
- British East India Company and the various missionary societies primary agencies of education in early 19th century
- Both framed tinnai pedagogy as steeped in mechanical memory

“...while they learn to read and write mechanically, the intellect is restrained from the exercise of its natural powers, and the heart deprived of those all important moral impressions, which can be fixed indelibly only in youth, merely in consequence of every school book used being in a different dialect of which the learner is profoundly ignorant”

(A. D. Campbell, 1825)

Bell's Madras system of tuition

- A case of pedagogic innovation that traveled from Madras to England and back to Madras and rest of India
- Rev. Andrew Bell reorganized the tinnai pedagogy into a set of principles based on Christian value system and principles of Scottish political economy
- Memory mode of learning in the tinnai now to suit the learning of the three R's – reading, writing and arithmetic
- Arithmetic operations taught with simultaneous construction of tables
- Mutual instruction with monitors guiding students
- Emulation, rewards and perseverance as normative values



Bell's School in Holborn, London 1811

Localizing pedagogies

- Bell's Madras system came back to Madras and rest of India during the early 19th century
- Era of concurrent teaching experiments by both EIC as well as missionaries faced with contending legitimacies before the local public
- Tamil schoolmasters taught Tamil arithmetic or 'native ciphering' in the same school as a different teacher would teach 'English' arithmetic under the Bell's system
- The first arithmetic textbook in Tamil, *Kanitadeepikai* by Pantulu Ramasamy Naicker published by the Company in 1825

Mid 19th century

- By the mid 19th century, elementary arithmetic curriculum became the four simple rules along with the rule of three
- Use of textbooks became indispensable, with the textbooks used in the British Military seminaries as role models
- School Book Societies produced textbooks in the vernacular, patronized by the Company administration
- Practicing problem solving in the four operations stuck to slates and a few attempts to introduce 'mental arithmetic' became mere supplements to the slate
- 'Perseverence' and 'steadiness of mind' found wanting among the colonial subjects!
- Tinnai schools however continued to flourish, and now palm leaves became printed books – without a single trace of any English numerals in them!

The Second Phase 1854-1882

- Converting the *tinnai* schools as agenda
- Official production and distribution of textbooks along with the rules of the grant in aid became vehicles of control
- School inspectors along with financial incentives (Payments by results, Payments by salary and the combined system) as strategies of conversion
- Caste in the conversion of the *tinnai* schools
- Institutionalization of relationship between schooling and employment through public examinations modeled on the British tests for civil services
- The *tinnai* resisted such conversion on grounds of incompetence and denial of functionality
- System of incentives denigrated the village school teacher!

Changing Compulsions

- By the 1870s, a well formulated critique of the curriculum, examinations and the rule of textbooks evolved and the most significant evil in education by then had become mechanical or rote memory
- Education Commission representations argued to assimilate the *tinnai*
- Sudden concerns for local relevance and the *tinnai* teacher's proficiency in arithmetic recounted and celebrated
- Employers lamented the loss of people trained in the 'old school' method!
- Other arguments openly demanded that the business of teaching 'deductive logic and arithmetic' be left to the natives themselves

Third Phase 1882-1900s

- Assimiliating the *tinnai* as agenda
- But, only 'English numerals' had to be used
- Learning weights and measures as conversion tables in relation to British standards
- Mental arithmetic now became an aid in rule based problem solving
- Anything from the *tinnai* now called as 'bazaar mathematics'
- Prudence in recollection not the preferred virtue but speed and diligent following of rules

Memory rules!

- DPI framed rules after rules, to fix curriculum and pedagogy from a distance
- Passing exams became the only objective
- Practice of problem solving as hard work
- Memorization of mathematical procedures
- Institutionalization of the 'examination raj'

Certain Indian innovations

- Textbooks became the only realms for intervention for those who were concerned
- But still limited to playing around with examples, deployment of better linguistic strategies
- The tables themselves had to be reorganized according to the modern demands of problem solving

Conclusions

- 'Civilizing the tinnai' paradoxically yielded the same effect – perpetuating mechanical memory
- Ideas related to 'relevance' of an arithmetic curriculum to a local public and to a colonial empire, continuously in the making
- Generations of young learners had to contend with such political exigencies within and outside the school
- Abilities of the mind and qualities of character ('perseverance', 'steadiness of mind') 'universally' required to learn math well, always found wanting in case of colonial subjects



Thank You