INDUS CIVILIZATION AND TAMIL LANGUAGE

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FOREWORD

The Department of Archaeology, Government of Tamil Nadu was started in the year 1961, to conserve and protect the monuments, and to carryout excavations in the historically important places in Tamil Nadu. Subsequently, the epigraphy wing was started to copy, decipher the inscriptions in the stone walls of the temples, hero stones and other loose epigraphs found lying in the villages. Later on the department was strengthened with the establishment of Chemical section, Photo section, and Publication section with Printing Press for printing and bringing out the publications of the department. Antiquities of 100 years old are registered under "The Antiquities and Art Treasures Act of 1972" and a separate wing is functioning in the department for this purpose.

This publication entitled INDUS CIVILIZATION AND TAMIL LANGUAGE was the outcome of the International Symposium held at Museum Theatre, Egmore, Chennai, on 15th&16th, February 2007. The government were pleased to sanction funds for this publication. The papers were compiled and edited as proceedings of the symposium in a book form by Dr. N. Marxia Gandhi, the then Deputy superintending Archaeologist. This publication will be useful for scholars and others in the field of epigraphy, archaeology and those interested in the study of Indus script and Tamil Language.

SITHARAM GURUMURTHI

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Dated 15-02-2009

PREFACE

An Intensive epigraphy campaign was launched by the Tamil Nadu State Department of Archaeology from September 2004 under my direction. The campaign included village survey, copying and decipherment of epigraphs and publication of unnoticed inscriptions by deploying all the technical staff of the department. It resulted in copying of 12,000 inscriptions and publication of five epigraphical volumes.

During exploration two polished Neolithic hand axes were collected from the garden of Thiru V.Shanmuganathan, a school teacher at Kutralam in Myiladuthurai district. One among them interestingly carried 4 Indus like symbols and was comparable to the symbols already noticed on megalithic potteries and rock paintings of Tamil Nadu. The symbols were confirmed as 'Indus signs' by Thiru. Iravatham Mahadevan, an eminent scholar in the field of Indus script.

Honourable Chief Minister of Tamil Nadu while highlighting the antiquity of Tamil culture and its spread up to Indus valley, suggested holding of a seminar on this subject. Accordingly, it was decided to conduct a seminar by inviting scholars and researchers as well as archaeologists who were involved in the excavations of Indus sites. An exhibition was held in April 2006 at the Chennai Head Office wherein the rare object was displayed for the benefit of scholars and public alike. Simultaneously, the views and comments of scholars both Indian and foreign were recorded and published in "Kalvettu" journal issue No.70 of April 2006.

Honourable Minister for School Education and Archaeology Thiru Thangam Thennarasu, not only approved the proposal and secured funding under Part II Schemes for the year 2006-2007, but showed keen interest in the organization of

the seminar right from the beginning. The symposium was held on 15th & 16th February 2007 when Dr. S.Gurumurthi, IAS, was the Principal Commissioner of Archaeology. In his valedictory address, Honourable Minister referred to the prevalence of Indus like signs from Adichchanallur potsherds to the totemic symbols of various tribal groups living contemporaneously in various parts of India and highlighted various aspects of Indus valley civilization and their impact on the Indian culture.

The response to the seminar was overwhelming and about 60 abstracts were received. Dr. Ka.Pa.Aravanan, former Vice Chancellor of Manonmaniyam Sundaranar University, Tirunelveli, Dr. R.Madhivanan, Director, Indus Script Study Centre, Chennai, Dr. R.Kannan, IAS, Special Commissioner of Museums, Chennai, Dr. A.Ekambaranathan, Professor and Head, University of Madras, Dr. D.Bhengra and Dr. Amerandranath, Directors, Archaeological Survey of India, Dr. T.Sathyamurthy, Superintending Archaeologist [Retd.], Thirumathi Sathyabama Badreenath, Superintending Archaeologist, Archaeological Survey of India, Chennai were some of the scholars who participated and presented their valuable views. Prof. Asko Parpola, Prof. Emeritus of Indology, University of Helsinki, Finland, Dorian Q.Filler, University college, London and Nicole Boivin, Cambridge University who could not attend the seminar had sent their papers. About 40 scholars attended the symposium and participated in the discussions, which were very fruitful.

The staff of this department particularly Dr. S.Rajagopal, Dr. S. Santhalingam, Mr. D.Thulasiraman, Mrs.Vasanthakalyani, Dr. S.Vasanthi, Mr. G.Muthusamy, Mr. R.Sivanantham, Mrs. B.Valarmathi showed great enthusiasm and dedication in organizing and conducting the seminar. I compliment Dr. N.Marxia Gandhi, Deputy Superintending Archaeologist, who acted as co-ordinator for the symposium and is responsible for editing and bringing the proceedings in a book form. The wrapper and photographs were designed by Mr. M.T. Sridharan, Photographer. I appreciate their efforts in bringing out this publication.

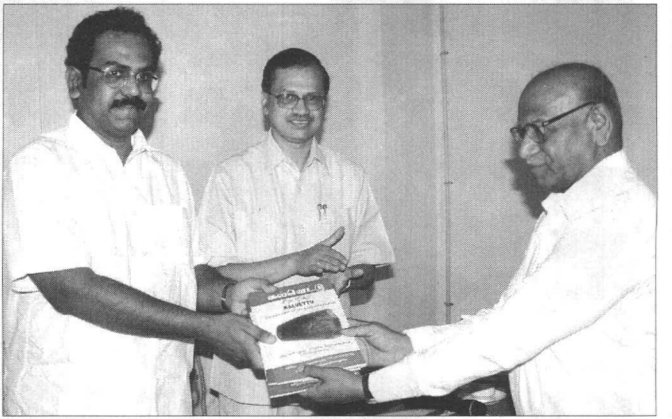
T.S. SRIDHAR



"திராவிடப் பண்பாடு நாடு முழுவதும் பரவியிருந்தது. மயிலாடு துறை அருகே கண்டியூரில் அண்மை யில் கண்டெடுக்கப்பட்ட பொருள்கள் சிந்துவெளி நாகரிகம் முழுவதும் திராவிட நாகரிகம் பரவியிருந்தது; தமிழர் நாகரிகமாக இருந்தது என்பதைத் தொல்லியல் வல்லுநர் ஐராவதம் மகாதேவன் குறிப்பிட்டுள்ளார். அத்தகைய தமிழை வாழ வைக்கச் சபதம் எடுத்துக்கொள்ளவேண்டும்."

– கலைஞர் மு. கருணாநிதி
தினமணி-5.5.2006

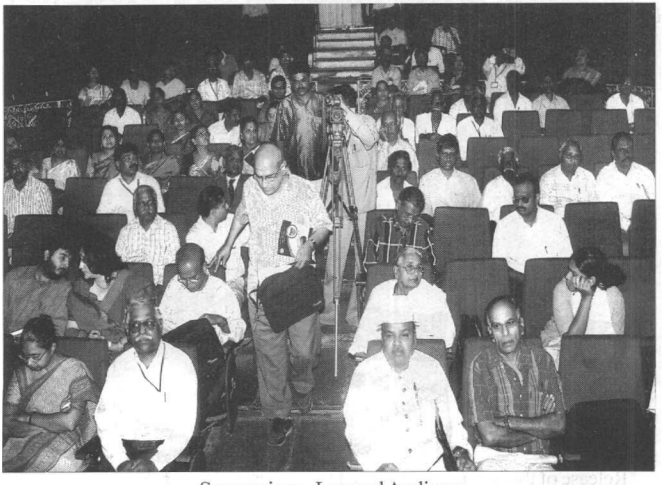
Hon'ble Chief Minister of Tamil Nadu Dr. M. Karunanidhi - with Neolithic hand axe.



Release of the special issue of the Departmental Journal KALVETTU - 70
by Hon'ble Minister for School Education & Archaeology Thiru. Thangam Thennarasu



Symposium - Dignitaries on stage



Symposium - Learned Audience

மாண்புமிகு பள்ளிக்கல்வித்துறை அமைச்சர் தங்கம் தென்னரசு அவர்களின்

கருத்தரங்க நிறைவுரை

நாள் : 16.02.2007

இன்று தமிழ் கூறும் நல்லுலகத்திற்கு ஒரு பொன்னான நாள். தமிழுக்கு உரிய தனிச்சிறப்பினை வரலாற்று ஆதாரத்தோடு மீண்டும் ஒரு முறை பறைசாற்றவும், அச்சிறப்பினை எண்ணி வியந்து மகிழவும் கிடைத்த இனிய நன்னாள். இந்தியத் திருநாட்டின் பல்வேறு மாநிலங்களில் இருந்து வல்லுநர்கள் இங்கு நடைபெற்ற தமிழகமும் சிந்துவெளிப் பண்பாடும் குறித்த பன்னாட்டுக் கருத்தரங்கத்திற்கு வந்திருந்து இந்தியாவின் மிகத் தொன்மையான நாகரிமான சிந்துவெளி நாகரிகத்தில் கிடைத்துள்ள எழுத்துகள் தமிழர்தம் மூதாதையர்களால் பயன்படுத்தப்பட்டவை என்பது குறித்து இங்குக் கூடித் தத்தமது கருத்துகளை எடுத்துரைத்துள்ளனர் என்பதை அறிந்து மகிழ்வுறுகிறேன்.

தமிழகத்தின் சிறப்புமிக்க பழமையான பண்பாட்டு வரலாற்றுக் கூறுகளை வெளிப்படுத்தவும், செம்மொழியாம் தமிழின் தொன்மையினை நிலைநிறுத்தவும், பண்டைய தமிழ்ச் சமுதாயத்தின் பன்முகக் கோட்பாடுகளை வெளிக்கொணரும் வகையிலும் தொல்லியல் துறை செயலாற்றி வருகின்றது. தமிழகத்தில் உள்ள நினைவுச் சின்னங்களையும், வரலாற்றுச் சிறப்புமிக்க கட்டடங்களையும் சீரமைத்துப் பாதுகாத்தல், வரலாற்று முக்கியத்துவம் வாய்ந்த இடங்களில் அகழாய்வு மேற்கொள்ளுதல், அவ்விடங்களிலேயே அகழ்வைப்பகங்கள் அமைத்துக் கிடைத்த தொல்பொருட்களைக் காட்சிக்கு வைத்தல், அத்தொல்பொருட்களைப் பதிவு செய்தல், நிழற்படமெடுத்தல், தமிழகத்திலுள்ள கல்வெட்டுகளைப் படியெடுத்துப் படித்துப் புத்தகமாக வெளியேற்றுவதில் போன்ற பல்வேறு தொல்லியல் தொடர்பான பணிகளையும் செவ்வனே செய்து வருகின்றது.

தமிழகத்தில் முதல் மனிதன் சுமார் ஒரு இலட்சம் ஆண்டுகளுக்கு முன்பே பயன்படுத்தி விட்டுச்சென்ற பழைய கற்காலக் கல்லாயுதங்கள் திருவள்ளூர் மாவட்டத்தில் பூண்டி நீர்த்தேக்கம் அருகில் உள்ள ஊர்களில் அதிக அளவில் கிடைத்து வருகின்றன. ஆகையால் இத்துறை பூண்டியில் தொல்பழங்கால அகழ்வைப்பகத்தினை அமைத்துள்ளது. இந்தியாவிலேயே இவ்வகையில் அமைந்த அகழ்வைப்பகம் இது ஒன்றுதான் என்பது பெருமைக்குரிய ஒன்றாகும்.

சென்ற ஆண்டு பிப்ரவரி மாதத்தில் நாகப்பட்டினம் மாவட்டம், மயிலாடுதுறை வட்டம், குத்தாலம் அருகேயுள்ள செம்பியன் கண்டியூர் என்ற இடத்தில் அவ்வூரைச் சேர்ந்த

தமிழாசிரியர் திரு. சண்முகநாதன் அவர்கள் தென்னங்கன்று நடுவதற்காகத் தோண்டிய குழியில் கிடைத்தது அரிய செல்வம் ஒன்று மிகப் பளபளப்பான கருநிறப் புதிய கற்காலக் கருவிதான் அது. அதில்தான் இன்றைய கருத்தரங்கம் நடைபெறுவதற்குரிய வித்தாக அமைந்த சிந்துவெளி நாகரிக எழுத்துகள் நான்கு பொறுத்தப்பட்டிருந்தன. அக்கண்டுபிடிப்பு தொல்லியல் துறை மூலம் நாளிதழ்களில் அப்போது வெளியிடப்பட்டது. அதனைக் கண்ணுற்ற தமிழக முதல்வர் டாக்டர் கலைஞர் அவர்கள் பெரிதும் உவந்து பெருமிதம் அடைந்ததோடு தனது உரையில் ''திராவிடப் பண்பாடு நாடு முழுவதும் பரவியிருந்தது. கண்டியூரில் அண்மையில் கண்டெடுக்கப்பட்ட பொருட்களால் சிந்து வெளி முழுவதும் திராவிட நாகரிகம் பரவியிருந்தது என்பதையும் அது தமிழர் நாகரிகமாக இருந்தது என்பதையும் காட்டுவதாகத் தொல்லியல் வல்லுநர் திரு. ஐராவதம் மகாதேவன் குறிப்பிட்டுள்ளார். அத்தகைய தமிழை வாழ வைக்க உறுதி எடுத்துக் கொள்ள வேண்டும்'' என்று குறிப்பிட்டார்கள். அதோடு இக்கண்டுபிடிப்பின் சிறப்பினை அனைவரும் அறியும் வகையிலும் மேலும் ஆழ்ந்த ஆராய்ச்சியினை மேற்கொள்ளும் விதத்திலும் இதுகுறித்த பன்னாட்டுக் கருத்தரங்கம் ஒன்றினை நடத்திட வேண்டும் என்றும் அறிவுறுத்தினார்கள். அதற்கிணங்க இன்று இக்கருத்தரங்கம் நிகழ்கின்றது.

உலகத்தின் மிகப்பழைய நாகரிகங்களான மெசபடோமிய, எகிப்திய, எலமைட் கிரீட், அனேடோலிய, சீன நாகரிகங்களோடு ஒருங்குவைத்து எண்ணத்தக்க நாகரிகமாக இந்தியாவின் சிந்துவெளி நாகரிகம் விளங்குகின்றது. இந்நாகரிகம் கி.மு. 7000 ஆம் ஆண்டு வாக்கிலேயே தொடங்கிக் குறைந்தபட்சமாக கி.மு. 1300 வரை தொடர்ந்து நிலவியது என்று அறிஞர்கள் கூறுகின்றனர். சிந்துவெளி நாகரிகத்தின் மிகச்சிறந்த கூறுகளாகக் கருதத்தக்கவை நகர நாகரிகம், பெர்சியா, மெசபடோமியா, ஆப்கானிஸ்தான் ஆகிய மேற்காசிய நாடுகளுடன் மேற்கொண்டிருந்த வணிகம், அரிய கலை மற்றும் தொழிற்கருவிகள், சமயம் மற்றும் சடங்குகள் சார்ந்த பல்வேறு தொன்மைச் சின்னங்கள், எழுத்துமுறை, சுழற்சி முறையிலான வேளாண்மையறிவு ஆகியவையாகும். அன்றாடப் பயன்பாட்டுக்குரிய பொருட்கள் மட்டுமல்லாது, கல்லிலும், சுடுமண்ணிலும், தங்கம், வெள்ளி, செம்பு மற்றும் வெண்கல உலோகங்களையும் பயன்படுத்திப் பொருட்கள் செய்யும் திறமையுடையவர்களாக அவர்கள் விளங்கினர். எலும்பு, தந்தம், சங்கு ஆகியவற்றாலான கருவிகள், அணிகலன்கள், விளையாட்டுப் பொருட்கள், அலங்கரிக்கப்பட்ட தளவாடப் பொருட்கள் ஆகியவற்றின் மூலம் அம்மக்களின் கலைத்திறனை அறிய முடிகிறது.

அந்நாகரிகத்தின் மற்றொரு சிறப்புக்குரியதான தொல்பொருட்கள் எனக் கருதப்படுபவை, அங்குக் கிடைத்துள்ள உருவ எழுத்துகள் பொறிக்கப்பட்ட முத்திரைகள் ஆகும். இந்த எழுத்துப் பொறிப்புகளோடு இணைந்து பல்வேறு வகையான மனித, விலங்கு, தாவர வடிவங்களும் அவற்றில் இடம்பெற்றுள்ளன. அந்த நாகரிகத்தினைத் திராவிட நாகரிகமே என்று இவ்வெழுத்துகளை ஆய்வு செய்த ஈராஸ் பாதிரியார், வால்டேர், ஃபேர்செர்விஸ் (Fairservis), ஹன்டர், ஜான் மார்ஷல், அஸ்கோ பர்போலா, கோனோசோவ்,

ஷங்காலயா, ஐராவதம் மகாதேவன் ஆகிய ஜெர்மானிய, ரஷ்ய, பின்லாந்து மற்றும் இந்திய ஆராய்ச்சியாளர்கள் உறுதியாகக் கருதுகின்றனர். இவ்வகையில் சிந்துவெளி எழுத்துப் பொறிப்புடன் கூடிய கைக்கோடரி தமிழகத்தில் கிடைத்திருப்பது தனித்தன்மையாகக் கருதப்படுகிறது.

இவ்வுருவ எழுத்துகளை அவை இடம்பெறும் இடத்தினை (முதல், இடை, கடை) அடிப்படையாகக் கொண்டு, கணினி உதவியுடன் ரஷ்ய, பின்லாந்து, இந்திய ஆய்வாளர்கள் மிகச் சிறப்பான அடைவு நூல்களை வெளியிட்டுள்ளனர். அவற்றின் அடிப்படையிலேயே தற்போதைய ஆய்வுகள் அனைத்தும் மேற்கொள்ளப்படுகின்றன. மொழியின் சொல்லாக்கம், மொழியமைப்பியல் ஆகியவற்றின் அடிப்படையில் இவை திராவிட மொழிக்குரியதாகவே இருத்தல் வேண்டும் என்பது அவர்தம் ஒருமித்த கருத்து இவற்றைச் சொற்பிறப்பியல் மற்றும் பண்டைய தமிழிலக்கண அடிப்படையில் ஆய்வு செய்த முனைவர் இரா. மதிவாணன் அவர்கள் அவற்றைத் தமிழாகவே படித்துள்ளார்.

அம்மொழியும், எழுத்தும், முதல், இடைச்சங்க காலத்தைச் சார்ந்தவை என்ற அவர் கூற்று சிந்திக்கத் தக்கது.

இன்றைய தமிழ் எழுத்துகள் இரண்டாயிரத்தைந்நூறு ஆண்டுப் பழமை வாய்ந்தவை. அன்றிலிருந்து இன்றுவரை இலக்கியங்கள் தொடர்ந்து முகிழ்த்த வண்ணம் உள்ளன. ஆனால் கி.மு. 7000இலேயே இந்தியா முழுவதும் பரவியிருந்த மக்களின் மொழியாகத் தமிழ் இருந்து என்பதையும், அம்மக்கள் மிக மேம்பட்ட நாகரிகம் உடையவர்களாய் இருந்தனர் என்பதையும் தெளிவாகக் காட்டும் சான்றுகளாகச் சிந்துவெளி நாகரிகமும், அங்குக் கிடைத்த தொன்மைச் சின்னங்களும் விளங்குகின்றன. இதுவரை தமிழகத்தில் சிந்துவெளி எழுத்துகள் கற்கருவியில் கிடைத்தது இல்லை. பெருங்கற்கால ஓடுகளிலும், வரலாற்றுக்கு முந்தைய கால ஓவியங்களிலும், சிந்துவெளி எழுத்துகள் பொறிக்கப்பட்டுள்ளன என்பதை ஏற்கெனவே ஆய்வாளர்கள் எடுத்துக்காட்டியுள்ளனர். எனவே சிந்துவெளி எழுத்துப் பொறிக்கப்பட்ட கற்காலக் கருவி கண்டறியப்படட நிலையில் இந்தியாவின் பல்வேறு மாநிலங்களிலிருந்து ஆய்வாளர்களும், அறிஞர்களும் சிந்து சமவெளி மற்றும் தமிழின் தொன்மையினைப் பற்றிய தங்களது அரிய கருத்துகளை இந்த மாநாட்டின் மூலம் பதிவுசெய்து உள்ளனர்.

சிந்துவெளி நாகரிகக் கூறுகள், தென்கோடியில் உள்ள தாமிரவருணி ஆற்றுக்கரை வரை – குறிப்பாக ஆதிச்சநல்லூர் வரை – பரவியிருந்தது அகழாய்வு மூலம் வெளிக்கொண்டு வரப்பட்டுள்ளது. தற்போது காவிரிக் கரையில் அத்தகைய சிந்துவெளி நாகரிகக் கூறுகளைக் கண்டறிந்துள்ளோம். வடமேற்கில் பஞ்சாப் முதல் தென்கோடியில் குமரிவரை தமிழர்தம் நாகரிகம் பன்னெடுங்காலமாகப் பரவிச் சிறந்திருந்ததைப் பல்வேறு கட்டுரைகள் வெளிப்படுத்தியதாக அறிந்தேன். சிந்துசமவெளி குறியீடுகள் இன்றுவரை பல்வேறு பழங்குடி மக்களாலும், திராவிட இன மொழி பேசும் வட இந்திய மக்களாலும் தொடர்ந்து பயன்படுத்தப்படுவதையும், பல்வேறு சடங்குகளிலும், நிகழ்வுகளிலும் அப்பண்பாட்டுக் கூறுகள் தொடர்ந்து கடைப்பிடிக்கப்படுவதையும், ஊர்ப்பெயர்கள் ஒற்றுமை பற்றியும் இங்கு எடுத்துக் கூறியுள்ளனர்.

கடந்த இருநாள்களில் சுமார் 40 அறிஞர்களின் கட்டுரைகள், சிந்துவெளி நாகரிகத்துடன் தமிழக வரலாறு, மொழி, எழுத்துகள், பண்பாடு ஆகிய அடிப்படை கூறுகளில் கொண்டிருந்த தொடர்பினைப் புலப்படுத்தும் வகையில் சமர்ப்பிக்கப்பட்டுள்ளன என்று அறிந்தேன்.

செம்பியன் கண்டியூரில் கிடைத்த எழுத்துப் பொறிப்புகளுடன் கூடிய புதிய கற்காலக் கருவி தனித்தன்மையுடைய கருவி என்பதை அறியும்போது, தமிழகத்தின் தமிழ் மொழியின் – தமிழ் எழுத்தின் தொன்மை மேலும் வலுப்பெறுகின்றது. இக்கருவியினைத் தமிழ்நாடு அரசுத் தொல்லியல் துறை கண்டறிந்த நிலையில் இந்திய வரலாற்று, தொல்லியல் ஆய்வாளர்களிடையே மிகச் சிறந்த ஆர்வமும், ஆய்வும் தூண்டப்பட்டிருப்பது அறிந்து மிகுந்த மகிழ்ச்சியடைகிறேன்.

அண்மையில் குமரிக்கண்டம் மற்றும் அதன் தொன்மை பற்றி ஆய்வு மேற்கொள்ள வேண்டுமென்ற கருத்து அய்வாளர்களால் பெரிதும் வலியுறுத்தப்பட்டு வருகிறது. எனவே குமரிக்கண்டம் பற்றியும், சிந்துசமவெளியுடன் தமிழகத்திற்கு உள்ள தொடர்பு பற்றியும் அறிந்து அப்பெருமையினை உலகமெல்லாம் அறிந்துகொள்ள, தமிழ் செம்மொழியாக அறிவிக்கப்பட்ட இக்காலக்கட்டத்தில் இக்கருத்தரங்கு வாய்ப்பாக அமைந்துள்ளது. இதனைத்தான் பாவேந்தர் பாரதிதாசன் அவர்கள்,

''ஒண்டமிழ்த்தாய் சிலம்படியின்
முன்னேற்றம் ஒவ்வொன்றும்
உன் முன்னேற்றம்
கண்டறிவாய்! எழுந்திருநீ!
இளந்தமிழா கண்விழிப்பாய்
இறந்தொழிந்த
பண்டைநலம் புதுப்புலமை
பழம்பெருமை அனைத்தையும்
நீ படைப்பாய், இந்நாள்,
தொண்டு செய்வாய், தமிழுக்குத்
துறைதோறும் துறைதோறும்
துடித்தெழுந்தே!

என்றார். இங்கு வருகை புரிந்து கட்டுரைகள் படித்துள்ள 40க்கும் மேற்பட்ட அறிஞர் பெருமக்களின் பல்வேறு கருத்துகள், தமிழ் காக்க, தமிழர்தம் வரலாற்றுப் பெருமை காக்க வழிவகுத்தலில் பெருமிதம் கொள்கிறேன். இக்கருத்தரங்கம் வெற்றி பெற்றமைக்கு என் வாழ்த்துகளைத் தெரிவித்துக் கொள்கிறேன்.

INAUGURAL ADDRESS

T.S. Sridhar, I.A.S.,
Special Commissioner,
Secretary to Govt. Personnal & Administrative Reforms Dept.

Ladies and Gentlemen, it gives me great pleasure to participate in the International Seminar on Indus Culture and Tamil Language and deliver the inaugural address.

At the outset, let me give you a brief account of how I came to be linked with the topic of this Seminar. I must confess that I am neither an Archaeologist, nor an Epigraphist. However, it was my good fortune to be associated with the Department of Archaeology since June 2004 and it was during this period of my stewardship that we happened to discover the Neolithic stone carrying Indus signs on it.

My contribution has been more towards appreciation of the importance of the find and recognition of the contribution of various players in its decipherment, as well as its disclosure and dissemination to the Archaeological World through Lectures and Exhibition. I also initiated the proposal for conduct of the International Seminar, for which I obtained Government approval and funding. Hence, my presence here today.

The Department of Archaeology was set up in the year 1961 exactly a hundred years after the Archaeological Survey of India was established - with a mandate to protect historical monuments, decipher inscriptions, conduct excavations, preserve manuscripts, maintain museums and register artifacts of cultural and heritage value. It also holds Lectures, Seminars on important topics of historical interest, publishes books and magazines on these topics and overall encourages the preservation and promotion of our rich cultural heritage.

As part of departmental activities, I launched an Epigraphy Campaign in the month of September 2004. It would be of interest to know that of the entire

corpus of inscriptions found in India-, more than 50 per cent numbering 25000 inscriptions are in the State of Tamil Nadu in the Tamil language. Unfortunately, not all of them have been copied and fewer still have been deciphered and published. With a view to expedite this activity, the campaign was carried out simultaneously by utilizing the services of all the technical officers of the Department. To quote some numbers, from the inception of the Department upto 2003, nearly 8000 inscriptions had been copied whereas during the campaign period (from September 2004 to June 2006), more than 9000 inscriptions had been copied by the staff. This was a remarkable achievement and the discovery and decipherment of the Indus symbols on the Neolithic tool came as a crowning glory to our field efforts.

The Neolithic tool as you know was found in the garden of a school teacher by name Thiru Shanmuganathan, who in turn handed it over to Thiru Muthuswamy, Curator of Tranquebar Museum, who happened to be the field officer co-ordinating the field survey in Thanjavur District. On 23rd February 2006, when I was camping in Thanjavur, he handed over to me two stone hand-axes. On scrutiny, I found that one of them carried certain inscription, which I brought to the office for subsequent decipherment by our Epigraphists, namely Dr.Marxia Gandhi and Dr. Rajagopal. Later, it was confirmed by Thiru I. Mahadevan, an acknowledged International Expert on Indus script. A number of other officers, too numerous to be mentioned individually, also assisted me during the discovery and dissemination stage.

The village Sembian Kandiyur forms part of composite Thanjavur District which falls within the Cauvery delta region. It is here that the river Cauvery joins the Bay of Bengal after travelling more than 1000 Kms. in Karnataka and Tamil Nadu. In the delta region, it branches off into five tributaries. The entire region is plain and level with sandy terrain having no rocks or hilly outcrops. As it is made of rock, there is no possibility of the stone tool having been manufactured within this region. Moreover, the tool was found during surface exploration and not during excavation. Considering all these factors, it would be safe to assume that the stone tool could have been manufactured in the rocky parts of Western Tamil Nadu (North Arcot, Dharmapuri or Coimbatore District) and brought to this place through trade or business exchange.

The district however, has a long and hoary archaeological past. The region around Vallam and Budhalur have been known to yield stone chips of the microlithic variety as evidenced from excavation and field trials conducted by

Tamil University, Thanjavur and the Archaeological Survey of India, Chennai. Several other places such as Nallavanniyan Kudikadu, Okkanadu Terelundur, Kilaiyur have also yielded innumerable artifacts and stone tools of the Neolithic period. The Neolithic age, as you all know, dates back to 10000 BCE when man gave up his nomadic lifestyle and took to agriculture. He began to lead a settled life and started domesticating animals like cows and goats. This was the period when he also began to communicate with his kinsmen as well as with members of other tribal groups. Rock paintings and petro-glyphs also began to appear around this time. It was during this phase of human development that the unpolished crude weapons of the Paleolithic age were replaced by the polished and shapely stone tools of the Neolithic era.

The presence of inscriptions on the Neolithic hand-axe clearly establishes the use of script during this period, which could have been any time between 10,000 BCE and 1000 BCE when the iron-age began. This period also coincides with the discovery of the flourishing phase of the Indus Valley Civilization, also known as mature Harappan phase, i.e. between 3500 BCE and 1500 BCE.

The Neolithic stone implement of Sembian Kandiyur has four well marked, separate signs etched on it. They run from left to right and are more prominent in the beginning and gradually diminish in size and intensity as they progress towards the right. All the four signs correspond with Indus symbols as identified initially by both, Dr. Asko Parpola, finish Scholar and Thiru I. Mahadeven, expert from Tamil Nadu. The four symbols are numbered as 48, 342, 367, 301, according to the Concordance of Thiru I. Mahadeven. The symbols 48 and 342 are a frequent combination in many Indus Seals and Sealing's; both the experts have confirmed the correctness of the decipherment and the association of the numbers to it.

Now, let us look at the significance of the discovery from an Indian point of view. It is the first Neolithic tool with Indus script found in the Thanjavur region. There is nothing spectacular about the discovery of Neolithic tools (hand-axes) in the State of Tamil Nadu. Thousands of them have been found scattered all over the State along the hilly districts, both during exploration and excavation. What is really unique is the presence of inscriptions, and that too, Indus symbols on one of the tools. This establishes a direct linkage between the Neolithic period and the Harappan Civilization. It also confirms the existence of contacts between North India and South India and the universal adoption of Indus symbol for purpose of trade and communication between different regions of the country. The fact that these signs were found in a tool in the far South of India confirms the

reach and comprehension of those inscriptions throughout the country. Thus Harappan influence beyond Godavari region stands confirmed proving contact of post-Neolithic people of Tamil Nadu with post-Harappan Chalcolithic culture of north Deccan. Thus it helps in dating Indus script usages during the premegalithic period ie. **2000 BCE to 1000 BCE average** 1500 BCE. It also establishes the prevalence of literacy among traders and the common man who could read and understand what was written on those stone objects.

Hence, this is a remarkable discovery and I would even say quite epochal in its significance. Thiru. I. Mahadevan has called it "the discovery of the century" and many experts, both from abroad and India have acknowledged the importance of the find. According to Michael Witzel it is a great find. Indrabala feels that this discovery has vast implication for the history of Tamil Nadu and the study of the Indus script. Dr. K.Rajan considers it one of the greatest discovery of the year as it has a wider implication in the history of the India. Dr. Asko Parpola advises us to proceed with caution considering the potential importance of this find. Finally Dr. Champakalakshmi believes the celt discovery is a very significant find independent of the readings and values assigned by the experts.

The purpose of holding this Seminar is twofold; firstly, to disseminate the fact of the discovery, the reactions and various studies so far carried out by experts in the field on the possibilities that have been opened up due to the discovery and secondly, by bringing together scholars from different parts and throwing fresh light on new developments in this field. It has rekindled the desire to do further research and come out with convincing answers to several unanswered questions. I am sure many of you here are waiting for the opportunity to present a paper from your particular perspective. All of them will be scholarly and well thought out. It will also lead to considerable discussion, and some times, even a little controversy, but at the end of the day, I can assure all that you would profit from this exchange of ideas done in an open and scholarly atmosphere. The purpose of the Seminar would have been richly served, if we can all go back with some more clarity on the various issues and topics that have been listed for discussion. More than 65 abstracts have been received and will be read here in four broad topics, namely, History, Geography, Script and language and Cultural links.

I am sure many more avenues for further deliberations will be thrown up after the Seminar. This is a continuous activity and the discovery of many more artifacts of a similar nature will help us to understand better the significance of this unique discovery. I wish the organizers all success in their endeavour.

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DISASTER AND MIGRATION: EVIDENCE OF GEO-ARCHAEOLOGICAL RESEARCH FOR DISPLACEMENT OF PEOPLE FROM GULF OF CAMBAY AND THEIR LONG MARCH TOWARDS SOUTH

D.Venkata Rao, B.Sasisekaran, Srinivasan Srinivasan

The Geo-physical or Geo-archaeological Research does not always result in substantiating oral or written historical events. However, such investigations carried out in the Gulf of Cambay from 1999 to 2004 seem to throw some light on literary evidence, which refers to the migration of people from Gujarat region to Southern part of India.

The investigations in the Gulf of Cambay revealed the vestiges of an ancient settlement and indicated that the region was quite active tectonically. The preliminary side scan and sub- bottom surveys carried out in the Gulf of Cambay region recorded a few N-S structural trends. High-resolution seismic surveys were carried out to obtain better definition of these structural trends (*Kathir,et, al., 2005*). While substantial literature is available on the tectonic movements and sea level changes in the Cambay basin during the tertiary, not much is available on the quaternary tectonics / neo tectonics of the Gulf of Cambay.

The studies cited here have thrown some light on the neotectonics of the region in the recent past. The seismic sections depict that the area had undergone intense folding and faulting. The layers are sheared and conspicuously absent with several features of faulting at surface and subsurface. The Gulf of Cambay with a tidal variation of 8 to 12 meters and currents measuring 4 to 6 knots present an agitated sea (*Kathir.et,al:2002*). The highly complex terrain affected by major faults and fractures seem to undergo periodic reactivation, resulting in many neo-tectonic activities affecting the seabed itself.

Archaeological material such as pottery pieces, micro tools, wattle and daub building material, vitrified materials etc., were recovered from the submerged surface by grab sampling and dredging operations. Since the artefacts recovered were of marine origin, geo-chemical studies were carried out to identify the provenance of the materials recovered by X-Ray Diffraction Studies and Trace and Rare Earth Analysis by IC-PMS method. The resultant study indicated that the artefacts were made from the locally available clay. The scientific analyses of different material recovered from the submerged area in the Gulf of Cambay confirm the existence of archaeological sites. Analysis of pottery and other geological samples indicates that an arid to semi-arid climate prevailed in that region before the submergence (*Vishwas.Gogte:2005*)

One of the artefacts collected include baked clay sealing with an impression of a seal on the obverse and a broken grove on the reverse. The sealing was found embedded on one of the wattle and daub wall material recovered through dredge. A pottery piece from the wattle and daub material was sent to Luminescence Dating Laboratory, Oxford for TL/ OSL analysis. The analysis from the Oxford Laboratory gave a calibrated date of 4,287 BP for the pottery piece. The age of the wattle and daub house material and the baked clay is thus firmly established from the TL date derived for the pottery piece (*Kathir.et, al: 2005*).

The presence of clay sealing, assigned to 4,287 BP, lead us to surmise that this part of the land had trade link with some area falling under Indus civilization. Though the excavations at Indus sites produced more than 3,000 seals made of copper, steatite and terracotta, there is a paucity of seal impressions on clay at these sites. The excavations at Harappa and Mohenjo - daro produced four seal impression, thirty-seven seal impressions at Lothal, five seal impressions at Kalibangan and one at Banawali. The clay sealing, a glyptic, without words found at Cambay is identical to the glyptic from Mohenjo - daro (*Kathir.et, al: 2005*). ***Taking into consideration the type of seal and the proximity of the Gulf Cambay to Indus basin, we are tempted to infer that there could have been some form of trade relations between these two regions.*** Explorations and excavations have amply demonstrated that the Indus civilization spread its wings far and wide, ***including Gujarat region.*** However, we are not sure whether such encounter with Indus Valley people was restricted to trade and borrowing of ideas alone or there was migration of people from ***Indus towns.***

Assuming that such a migration has taken place, the migrants were not lucky enough to stay and prosper. A cataclysm, similar to the recent Tsunami, struck and submerged their adopted land. The submergence of present off shore region of Cambay is due to various factors and the chief among them is the tectonic upheaval, a major event, confirmed by C^{14} date around 3,000BP.

Prof. Gartia also evaluated the Palaeo earthquakes of this region by TL/OSL dating. Based on the study on fine grain components of the Palaeo earthquakes induced by sand blows of Kachchh region, it was inferred that the Gujarat region had experienced at least large earthquakes around 1,500, 3,000 and 5,000 BP, respectively. This was further corroborated by the OSL dates of 3,000 BP for the Palaeochannel.

Loud echoes of this massive upheaval are heard in early literature like *Mahabharata* and a later work, *Brihatkatha* (c.2nd century BC). The 'Mausala Parvan' of *Mahabharata* states that, "the event was preceded by unabated rumbling of the earth throughout the day and night, birds screamed continuously (*Mahabharata*, Mausala, 2.6), and heavy winds swept the land. The sea, which has been beating against the shores suddenly, broke the boundary that was imposed on it by nature. Huge tide with great height surrounded Dwaraka. The sea covered up everything and in a matter of few minutes, there was no trace of the city" (*Ibid.*, 7.43). We know that after the Mahabharata war Lord Krishna migrated to Dwaraka with his clan. He is also said to have indicated about the calamity in store for the people of that place.

The reference to submergence of Dwaraka was not confined to the two works mentioned above but is found in the Tamil literature also. *Kongu Velir Perunkathai*, a supposed translation of *Brihatkatha*, mentions the events like tectonic activity and incursion of sea leading to the migration of people from that place. Yet another reference to this catastrophe is noticed in *Purananuru*, a literary piece much earlier than *Kongu Velir Perunkathai*. The author of this poem mentions (v.201) that nearly forty-nine generations before the time of the Velir Chieftain Irukkuvel, Dwaraka was submerged and it resulted in the migration of people from that place towards southern part. This may not be an uncommon act since it is widely acknowledged that disaster victims migrate from affected areas.

But in the present state of our knowledge about this event in the history of

people of Indus region, Gujarat and Tamil speaking areas, it is difficult to conclude or even assume from these references that these migrants from Gujarat region, at least a part of them, were related to people of the Indus region. However, the fact remains that we have no other evidence to lean on to substantiate this theory. Perhaps, further research and discussions in the seminars like the present one organised by the Tamil Nadu State Department of Archaeology may unravel this mystery.

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Mahabharata, Mausala Parvan, v.2.6

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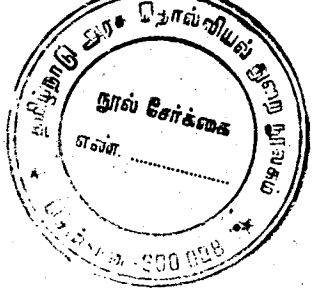

A NOTE ON SOME METHODOLOGICAL ISSUES FROM PREHISTORIC INVESTIGATIONS IN NORTHERN TAMIL NADU

Shanti Pappu and Kumar Akhilesh

An essential, yet often neglected, issue in Indian archaeology, is the study of processes leading to the formation of archaeological sites. The need for a clear understanding of the context and nature of artefacts and other features from excavated trenches and surface collections, is often an implicit goal of research projects. Despite an overall acknowledgement of the importance of examining processes, which have led to the formation of any feature, horizon, layer or formation in a site; these issues are often overlooked when proposing theories related to past behaviour. In India, site formation studies have formed a part of some prehistoric research projects, although such approaches are practically negligible in the case of research in later cultural periods. While field archaeologists acknowledge the effects of fluvial, aeolian, marine, and other geomorphological processes, animal and plant action, and later cultural impacts on a site; systematic studies to document these are few and far between (Ahasan, 1993; Allchin *et al.*, 1978; Corvinus, 1983; Jacobsen, 1979, 1983; Jhaldiyal, 1998; Mishra, 1982; Misra and Rajaguru, 1989; Misra *et al.*, 1990; Paddayya, 1979, 1987; Paddayya and Petraglia, 1995; R.S. Pappu 1995; S. Pappu, 1996, 1999; Sankalia, 1974; Sharma and Clark, 1983).

This paper focuses on a few methodological issues adopted in our ongoing research project in Northern Tamil Nadu. This multidisciplinary research involves studies of the prehistoric archaeology and past environments over the Middle Pleistocene to Early Holocene, in the basins of the rivers Kortallaiyar, Cooum, Arani, Adyar and Palar. Initiated in 1991 as part of the first author's dissertation in the basin of the river Kortallaiyar (Pappu, 1996, 2001); the project now encompasses a wider study region, and involves excavations and studies at the important site of Attirampakkam, Tiruvallur district (1999-ongoing). While detailed reports of this work are available elsewhere (Gunnell *et al.*, 2006; Pappu,

2007; Pappu and Kumar, 2006; Pappu *et al.*, 2003a,b, 2004) this paper presents a brief note on methodological studies adopted to address particular needs of the site and research questions addressed.

The Regional Archaeological Record and Context of Sites

The regional topography comprises the NNE-SSW-trending Allikulli and Satyavedu hills (200-380 m AMSL) in the west. These are uplifted and well preserved palaeodeltas of early Cretaceous age (Muralidharan *et al.*, 1993; Kumaraguru and Trivikrama Rao, 1994). The cobble conglomerate they consist of was sourced by the quartzitic Cuddappah ranges to the west. The lower-lying areas of the piedmont are underlain by shaly marine rocks, the Avadi formation. Being coeval and intertonguing with the conglomerate beds, it may represent the palaeodelta bottomset beds. The shales are capped by Tertiary laterite. Throughout the region, lateritic gravels (1.5-2.5 m thick) sourced by these outcrops contain Acheulian to Middle Palaeolithic artefacts. Stratigraphically younger ferricrete layers, which also represent eroded gravels sourced by the laterite, contain Middle Palaeolithic artefacts and microliths occur on the surface (Pappu, 2001; Gunnell *et al.*, 2006).

Attirampakkam is located ca. 47 km inland from the East Coast (13°13'50"N and 79°53'20"E; 37.5 m a.s.l.) on the banks of the Attirampakkam gully, an ephemeral stream that joins the Kortallaiyar river ca. 1 km downstream from the site. Annual rainfall (105-125 cm) currently peaks between September and December, and rain rills dissect the site so that artefacts become exposed as they erode out of an area of 50,000 m^2.

Excavations at Attirampakkam (Gunnell *et al.*, 2006; Pappu 2007; Pappu and Kumar, 2006; Pappu *et al.*, 2003a,b, 2004), led to the exposure of Lower and Middle Palaeolithic to Late Palaeolithic tools in several trenches over an area of 220 m^2 (Fig.1). The stratigraphy from the base comprises a laminated argillaceous bed (Layer 6), disconformably overlain by a thick sequence of ferruginous gravels (Layer 5) capped by argillaceous colluvium (Layers 3, 4). These are overlain by finer ferruginous gravels (Layer 2) and argillaceous colluvium (Layer 1). Acheulian industries were noted in Layers 6 and 5, with industries possibly transitional to the Middle Palaeolithic in Layers 3 and 4. Middle Palaeolithic assemblages were noted in Layer 2, with a possible early Upper Palaeolithic component. The most significant discovery was the unexpected occurrence of

Acheulian tools in Layer 6, previously classified as bedrock belonging to the Avadi or Sriperumbudur shale series.

Methodological Issues in Excavation and Analysis

One of the most important questions in the study of a multi-cultural Palaeolithic site is to investigate varied uses of the site through time in response to changing environments and hominin response to the same. However, prior to interpreting assemblages in terms of hominin behaviour it was essential to investigate the following issues:-1)time scales of accumulation of artefact scatters-i.e., how far one may segregate assemblages within various contexts in terms of short or long term depositional events; 2) the impact of re-use and reoccupation of the site through time and effects on artefact assemblage structure and physical properties; 3) impact of various natural geomorphological processes on the physical state of artefacts and on their spatial distribution; 4) the effect of animal and plant action on the site and on the artefacts; 5) the impact of later cultural activities including modern activities (recent land-use patterns, past excavations, etc.) on the site; and; 6) situating these studies within the regional archaeological and geological landscapes.

The methodology for regional studies included the use of satellite remote sensing and GIS to map landforms, palaeo-channels and other features of the natural landscape and to situate the sites documented as a result of field studies within this context. In the case of surface scatters, detailed maps of each location were prepared, situating the artefact in its correct sedimentary context, and attempting to determine causes for spatial clustering of artefacts. The physical state of artefacts was also documented carefully as described elsewhere (see Pappu, 1999, 2001). At the first stage, the regional geomorphic processes were taken into consideration, followed by the depositional history and site-level topographic features. The depositional history and micro-topography of each site was next considered in order to identify processes of deposition of each sedimentary unit and to correlate this with processes operating at the level of the region. Satellite images were studied in order to identify geomorphic features, and to determine current landuse patterns which were corroborated by field observations. Processes taken into consideration in this work included: a) geomorphic processes including fluvial, gravitational, aeolian and soil forming processes and neotectonics; b) biogenic processes such as the effect of floral and faunal

action (Wood and Johnson, 1976); and c) current and historical land use patterns including water management, cultivation, deforestation and afforestation, animal grazing and construction. Variables considered were as follows: 1) textural and chemical analyses of sediments was carried out. A study of the mode, intensity and duration of processes influencing deposition and erosion was also carried out (Isaac, 1989; Rapp and Gifford, 1985; Schackley, 1978; Schick, 1974; Schiffer, 1987; Stein and Farrand, 1985); 2) artefact spatial distribution: the horizontal and vertical distribution of tools was plotted. Other factors considered involved the clustering of tools of different sizes and size-sorting of tools and natural clasts; 3) artefact morphology: studies of artefact rounding, abrasion, size ranges and patination was considered as also nature of encrustations on artefacts, influence of raw material, etc.

In addition to this, meticulous documentation of artefacts and other features were taken into consideration during the course of excavations at Attirampakkam. Before excavations commenced, a contour map was prepared of the local to pography, and mapping of surface sediments, previous trenches excavated and gullies were plotted (see Pappu *et al.*, 2004). The site was divided into reference grids and datum points laid down. Further, all test-pits, trenches, sections studies, experimental plots, etc., were plotted with reference to this master grid. A total area of 220 m^2, was excavated (see Pappu *et al.*, 2004). Test pits, step trenches and horizontal trenches were excavated. Within the principal trenches, quadrants of 0.50 m x 0.50 m were laid out. Excavations were conducted following natural levels or surfaces, (i.e following the contours of the sedimentary layers), or with digs ranging from a few cm to a maximum of 5 cm. All artefacts and natural features >2 cm were mapped in situ and the sediments were sieved under a 1 mm sieve. Often water was used for sieving. In addition to this, samples of sediment were collected after sieving for studies of micro-debitage. In addition to three-dimensional measurements of all artefacts and features, their orientation and pitch were also measured, as also the surface on which they rested, and any other special features (Fig.2). While further details of the excavation methodology are given elsewhere (Pappu *et al.*, 2004), it must be noted that this meticulous documentation has yielded interesting results in ongoing analysis and interpretation of artefact distribution. An important feature was the documentation and recording of all natural clasts (i.e. pebbles and cobbles) within the trench, which has led to the documentation of past fluvial patterns on a micro-level (Fig.3).

At Attirampakkam, one of the key issues involved was the determination of whether Acheulian artefacts were in-situ within the argillaceous deposits of Layer 6 (which had previously been designated as comprising Avadi series of marine shales). For this purpose, a combination of methods were used taking into consideration palaeomagnetic measurements, geochemistry, artefact size and inclination, evidence of micropalaeontology (Gunnell *et al.*, 2006), experimentation in similar sediments and studies of soil mechanics.

The presence of animal action at archaeological sites, is an important factor tracing vertical and horizontal movement of artefacts and their physical state, etc. owing to burrowing, nesting, digging and trampling activities, displacement by root action, etc. This is particularly important at those prehistoric sites, where raw material may remain the same through time, and where technological changes may not be very distinct. At Attirampakkam, a systematic documentation of animal action was undertaken in the following ways. The presence of possible animal footprints was noted in several trenches at the contact horizon between Layers 5 and 6. In order to investigate this further, these were mapped, drawn, and photographed, casts were prepared, and actualistic studies are in progress. Detailed documentation of animal burrows present in the trench, including mapping their location, dimensions, orientation, depth and infilling material was undertaken. Such studies point to several phases of burrowing activity spanning different time periods. Similarly the documentation of modern animal vertebrae at various depths within the site, do indicate that movement form the surface downwards, is a feature that occurs even in deeply buried sites, and therefore calls for great caution in interpreting spatial distribution. Plant action in the form of older calcrete root casts and modern roots were also documented. In the laboratory, studies of artefact abrasion of various kinds (Pappu, 1999, 2001), artefact patination and staining, differential patination on artefact surfaces, presence of calcareous or ferruginous encrustations, artefact refitting, etc., are in progress. The use of software solutions towards understanding the orientation and inclination of artefacts, and the inter-relationship between various parameters has aided in a better understanding of the site.

Conclusion

While ongoing studies and results obtained so far have been published elsewhere, the point emphasised in this paper lies in the realm of methodology,

adopted in our work at Attirampakkam and other localities in Northern Tamil Nadu. Care is being taken to ensure meticulous documentation of all features at a site, and to put forward alternate hypotheses on the entire process of site formation taking into consideration varied ways in which both behaviour and subsequent natural factors lead to the accumulation and distribution of artefacts. While most archaeologists would prefer to assume the 'primary' nature of sites they work on, this is not always the case. The degree to which natural processes influence the nature of sites and artefacts, the individual history of artefacts themselves from stages of manufacture to discard and possible re-use, the history of sites and regions, and the theoretical and methodological approaches adopted by scholars all influence interpretations of the past. This note, stresses the need for critically examining surface sites and excavated material prior to proposing theories of past behaviour, not only in the case of Palaeolithic archaeology as discussed here, but also for later cultural periods.

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Fig.2: Removal of artefacts using packing foam for further studies.

Fig.3: Mapping of artefacts and natural clasts within the trench

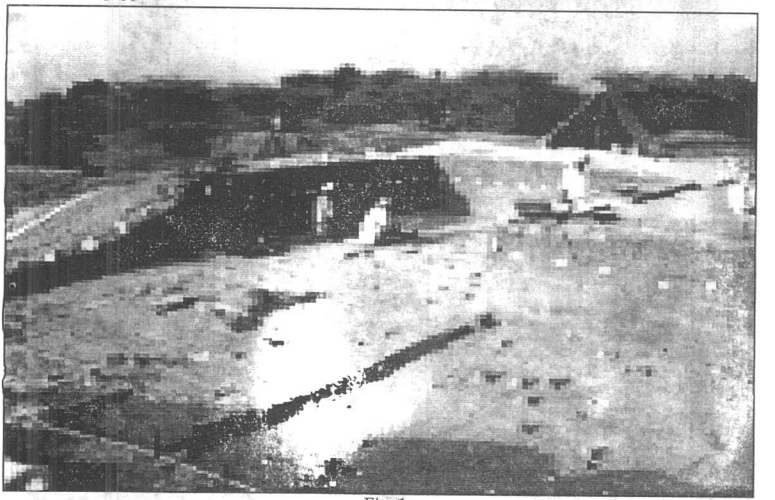

Fig. 1

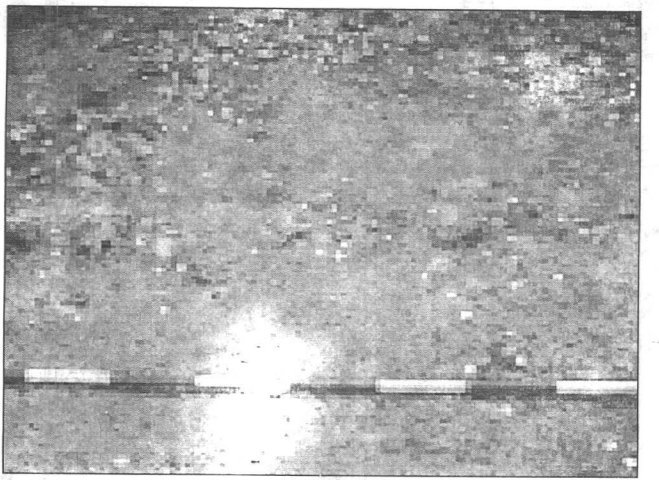

Fig. 2



Fig. 3



Fig. 1a: Kerala and Tamil Nadu regional map



Fig. 1b: Laterite cliff at Papanasam in Varkala, Kerala



Fig. 1c: Ferricrete overlain by alluvio-aeolian deposits at Odai, Tamil Nadu

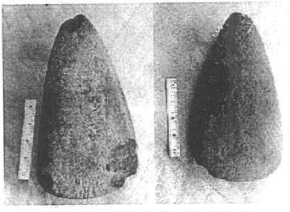

Fig. 1d: Neolithic Axe from Muntruthurai

Fig. 1a to 1d

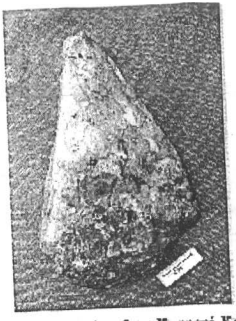

Fig. 2a: Neolithic Axe from Kunnoni, Kot[illegible]ayam

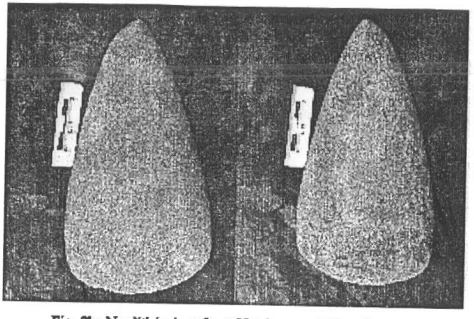

Fig. 2b: Neolithic Axe from Vembayam, Trivandrum

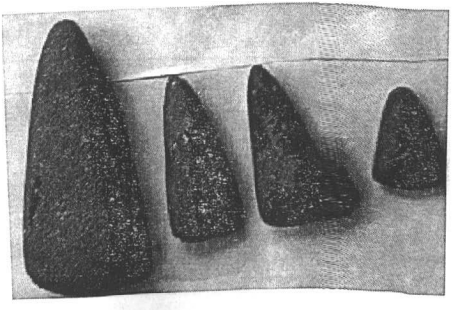

Fig. 2c: Neolithic Axe from Kalac[illegible]i

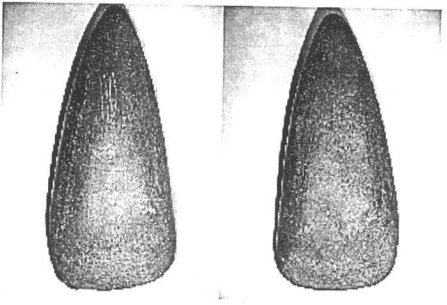

Fig. 2d: Neolithic Axe from Chempilavil

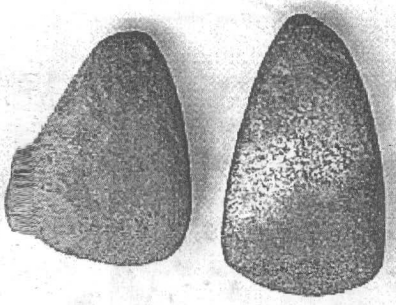

Fig. 3a: Neolithic Axe from Upputhara, Idukki



Fig. 3b: Mesolithic carvings at Ankode rock shelter

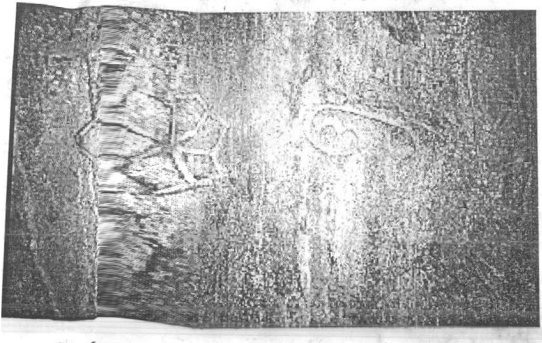

Fig. 3c: Post-Mesolithic to early Historic carvings at Ankode rock shelter

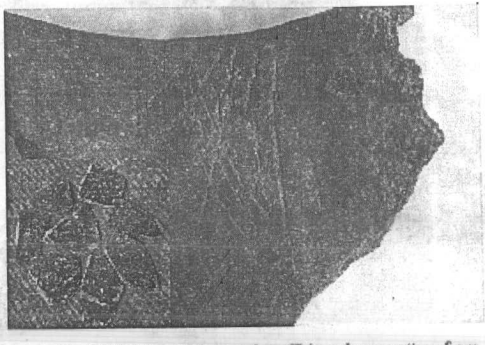

Fig. 3d: White paintings and graffiti marks on pottery from Oliyani Cist Burial

SIGNIFICANCE OF THE NEOLITHIC CULTURAL EVIDENCE FROM KERALA AND TAMIL NADU

Prof. Dr. P.Rajendran

Introduction

Kerala and Tamil Nadu, respectively on the south-west and south-east coasts of India (Fig.1a), have rich archaeological evidences of the Prehistoric, Protohistoric and Historical periods. Tamil Nadu remains well known in the Stone Age studies since 1863 due to the discoveries made by Robert Bruce Foote (1916). Even though there was slackness in such studies, in recent years there is a spurt in research in this field in Tamil Nadu which has brought illuminating results, lastly with an exemplary evidence probably of Indus script on a Stone Axe.

Archaeological studies in Kerala have new impetus since 1974 and by now evidence of several cultures beginning from Palaeolithic, Mesolithic, Neolithic, Chalcolithic, Megalithic and early Historic have come to light (Rajendran.2000, 2003). Prehistoric cultural evidence, particularly of the Palaeolithic of the Pleistocene, from both the regions contrasts each other while a lot of similarity has been observed in various cultures, beginning from the Mesolithic to Neolithic and Megalithic, of the Holocene period.

Studies on palaeoenvironment of these two regions reflect differently. Presence of various types of laterites in both the regions, in fact, show monsoon tropical situation during the Pleistocene period. Even though such situation still prevails in Kerala (Fig.1b) a gradual change from tropical to semi-arid to arid situation has been noted in Tamil Nadu (Fig.1c) from end of terminal Pleistocene. Contrary to the difference in environment, cultures in the Holocene period in these regions remain more or less same. In this context development of various cultures in these two regions have greater significance.

Back-Drop

Following the discovery of Neolithic cultural evidence from Arikamedu by Wheeler (1945) several such sites have been later found through explorations and excavations by T.N. state Dept. of Archaeology Narasimhaiah, Raman, Rajan etc. in different parts of Tamil Nadu. Sites were located in rock-shelters, Hill-tops and High-lands. The evidences have been found from the surface as well as in stratified context. Some of them are habitation sites. Among the excavated sites Mayiladumparai has yielded the Neolithic evidence stratigraphically between the Microliths and Megaliths (Rajan et al.2004). Narasimhaiah (1980) has dated Paiyampalli Neolithic site to 1800 B.C and he has discovered five Neolithic sites at Gollapalli and Togarapalli which yielded nine axes and two adzes. The excavation at Modur Malai in Palacode Taluk of Dharmapuri district has yielded Neolithic axe (Sridhar and Vasanthi.2005). In certain cases Neolithic tools are found in the Megalithic context. Neolithic celts were found with in a Megalithic grave at Melppanaiyur (Rajan.2003), and Venkatarangam Raju had collected two Neolithic tools from an Urn burial at Mottaimalai (Gandhi.1983) which clearly shows the existence of cultural elements in the later period. It is the same case at Sadur where Neoliths are found with the Megaliths. Discoveries made by Rajan at Gollapalli, Togarapalli, Madur, Vedarthattakkal, Kulahattur etc. have enriched the Neolithic evidence of the region. As in any other region in India here also Neolithic evidences are found with post-Neolithic cultural phases.

The first discovery of a Neolithic tool from Kerala was made by Philip Lake (1891) from the foot of Kannyakod Hill north Kerala. Later Logan and Fawcett (1901) had collected a few quartz flakes, a fragment of a Neolithic celt and a couple of beads from Wyanad. Stone axes of the Neolithic culture were also reported from Kalpata and Pulppalli in Wyanad, Attappadi in Palghat, Alway in Ernakulam and Thiruvalla in Pathanamthitta. In recent years such evidences have also been found from Mantrothuruth (Fig.1d) in Kollam district (Rajendran.2001), Kunnoni (Fig.2a) in south Poojar of Kottayam district (Rajendran.2005), Vembayam (Fig.2b) near Nedumangad in Trivandrum district (Rajendran and Deya.2006), Kaladi (Fig.2c) in Ernakulam district, Chempilavil (Fig.2d) near Maridom in Kottayam district, Upputhara (Fig.3a) in Iduki district etc. Most of the Stone axes are well grinded. Only a few are fully polished, attained through all the four stages such as flaking, pecking, grinding and polishing for its prepa-

ration. Some of them retain use mark as striations at their distal end in right angle, indicating their functional aspect (Fig.1d). Proximal end of some of the Stone axes has battering marks indicating their multipurpose use. Stone axes are usually made of locally available rock raw materials such as granite, gneiss or quartzite. The only exception noted is at Kunnoni where the Stone adze is made of the locally available quartz (Fig.2a). It has been prepared only through flaking and pecking and it retains a rough morphology. Stone axes have well defined morphology with a moderately wide convex working edge at the distal end and a pointed part at the proximal end. Stone axe has an oval cross section at the middle while it is hemi-spherical in the case of Stone adze.

Supposition

Close similarity in the Neolithic cultural materials of these two regions probably signifies more or less similar human settlement at that time. Evidences from Tamil Nadu are mostly found from Hilly terrain and foot-hills while in Kerala they are obtained from coast to the Ghats regions. Utilization of locally available raw materials for tool preparation is common and the artifacts resemblance is quite similar contrary to the difference in environment. Cultural evidence from different physiographical zones probably shed light on their preference for settlement and subsistence strategy based on the ecology of the region. Ceramic and aceramic characteristics noted in Tamil Nadu Neoliths have bearing in their chronology. No such evidence has been obtained so far from Kerala to give any such chronological interpretation. However, the general characteristics of the Neolithic implements from Kerala show close similarity to other such finds from south India.

Some of the petrographs and petroglyphs seen in the rock-shelters and caves in these two regions definitely belong the Neolithic phase since the prehistoric art in the region has the chronology beginning from Mesolithic (Fig.3a) to early Historic (Fig.3b)). Carvings, paintings and graffiti marks seen on the Neolithic and post-Neolithic potteries from Tamil Nadu have greater importance. Such aesthetic art in white paintings (Fig.3c) and graffiti marks (Fig.3d) respectively on the black polished pottery and red pottery is found in the Megalithic context from the Cist burial at Oliyani in Kunnoni of South Poojar in Kottayam district in Kerala. As in the case of any other culture Neolithic finds are also found in the post cultural period and it is more evident in south India.

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INDUS LIKE SIGNS ON NEOLITHIC TOOL - A REPORT

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Description of the Tool

Two tools were obtained from Sembian Kandiyur belonging to the Neolithic period. One of them is well polished, black in colour and slightly damaged in three places. The other one is semi polished and pale brown in colour. The first one is made of Dolerite dyke rock; it obtained the dark colour due to the presence of mafic minerals and polish. The second one could be of Granulite (metamorphic) rock made up of light & dark colour minerals.

Measurements: 1) 6.5 x 2.5 x 3.6 x 4 cm; wt. 125 gm.

2) 7.2 x 2 x 4 x 5.2cm; wt 158 gm

The former is a pointed butt axe, small flat, triangular in shape similar to No: 5 of fig 2 and the latter is a small lenticular axe similar to No : 10 of type B (i) from Brahmagiri[1].

Description of signs and their Presence

Four signs on the polished tool have been noticed and they are very much similar to the Indus signs of Nos. 48, 342, 367 and 301 of "Concordance of the Indus Script" by I. Mahadevan [2] The first sign looks like a human skeletal body with prominent row of rib scatted on his haunches, body bent and contracted with lower limbs folded and knees drawn up. The second one resembles a jar with handle on left side. The third is shaped as a Trident with small loops on the top of the three branches and the last one like a vertical crescent with a loop in the concave middle portion. While engraving the signs, dots were pecked initially and were connected. It could be inferred that the signs were written from left to right only, from the thrust given in the beginning and the larger size of the scripts, which decrease slowly to the right.

Occurrence and Freguency in Indus

The first sign occurred 74 times in the initial position, 93 times in the middle and 3 times in the final position and hence totally represented 168 times. Like wise the second sign is placed 3 times in solus, 420 in the middle, 971 in the final, so totally 1395 times; incidentally this is the sign that stands first for maximum frequency in the whole collection of Indus culture. The third sign is used 5 times in the middle and thrice in the final position and hence occurring totally 8 times. The fourth one stands 4 times in the initial position and 9 times in the middle. The combination of the first two signs as a pair written from right to left occurs in 174 places (I.M. p 725) and left to right in 2 places. (I.M. p. 741) and the combinations of second and third sign occur thrice (I.M. p 743). These are all remarkable resemblances as part of this find. All these four signs are present in all type of antiquities of Harappan Culture viz seals, sealing, miniature tablets made of stones, terracotta and faience, pottery engravings, copper tablets, bronze, ivory or bone, and miscellaneous objects including a bronze celt on which among others, third sign of Kandiyur find has been incised.[3] These are spread over almost all the major Indus sites namely Mohenjodaro, Harappa, Chanhudaro, Lothal, Kalibangan, and other sites including West Asian finds.[4]

Presence of the Signs other than Indus

The signs of Indus were not confined to that culture only. It seems to be adopted continuously by the successive generations of India. Isolated signs of Indus are very commonly present on the potteries of megalithic, which is termed as Iron Age also. B.B. Lal in his illustrious article, after a systematic survey of available material, from Harappan times to the Christian era put forth some conclusions. He studied all the available graffiti on megalithic potteries belonging to Tamil Nadu, Karnataka and Kerala. That included Adichchanallur (Thrunelvelli Dt), Kunnattur, Sanur, Tozhuppedu, Perumbair (then Chingleput Dt) Vellalur (Coimbatore Dt) and the collections from Coimbatore, Madurai, North and South Arcot districts of Tamil Nadu, which are deposited at Madras Museum. He included and studied the finds from Amri, Harappa, Lothal, Kalibangan, and Mohanjadaro, which belonged to Harappan culture and Korat, Rangpur, Navadatoli, Prakash, Navesa, Chandoli, Bahat of Chalcolithic culture. He compared 47 symbols of Megalithic with Harappan and Chalcolitic period and highlighted the remarkable similarity found among them with illustrations. He

classified categorically some six symbols exclusively prevalent on megalithic potteries and 8 symbols common in post Harappan Chalcolithic pottery not traceable in megalithic potteries.[5]

Dr. S.Gurumurthy while attempting the decipherment of Indus scripts dealt with 3,058 graffiti from 108 sites all over India that belonged to Neolithic, Pre-Harappan, Harappan, Chalcolithic, South Indian Iron Age burial and habitation sites. He also pointed out the similarity of 106 graffiti carrying the Indus scripts.[6]

Among the excavations of Tamil Nadu, Kodumanal and Vallam have yielded large number of graffiti. Vallam cultural deposits have been divided into two periods I & 11; Period I again sub-divided into two as A & B, mainly according to the occurrence of graffiti; 73 graffiti were concorded, physically described and compared with other graffiti of various sites of India as well as the work of B.B.Lal.[7] From the above mentioned facts we are in a position to analyse the signs on the Neolithic hand axe from Sembian Kandiyur; accordingly an attempt has been made to fix the date based on hypothesis.

Chronology

It is certain that these tools are of Neolithic period. As far as the signs are concerned two probabilities can be pronounced. One is that the signs could have been engraved in the Neolithic period itself. The second one is that they could have been imposed at a later period than the manufacturing date of the tool. At any rate the upper and the lower limits of both possibilities should be considered. For the Neolithic period the date has already been fixed by scholars as ranging from 5,000 to 3,000 BCE.

The possibility of engraving the signs by an iron stylus also cannot be ruled out. In that case the lowest limit for the period of engraving might be inferred as Iron Age. As mentioned above various Iron Age sites have been excavated and they have yielded many potteries with graffiti marks. Majority of the archaeologist assigned the date of Iron Age to be 500 BCE as upper limit. So the engraving period must surely have been in between 3,000 BCE & 500 BCE.

Researches so far made about the antiquity of writing have given some clue for the understanding of this script also. It is not easy to set aside the similarity of the signs of Kandiyur finds and Harappan seals and sealings etc., Harappan culture is an unique one and the people of the culture used the metal Copper

and Bronze predominantly. The blades of microlithic period were also in use. So, Harappan culture must have been sustained at least 1000 years between 3, 000 and 1500 BCE. Now the long span of time and space has to be filled up for establishing the continuity of the signs from Harappan to Iron Age. In the general pattern, after the Neolithic culture two phases were there; namely, Copper and Bronze Ages, wholly termed as Chalcolithic period. As far as the Deccan is concerned the excavations held at Brahmagiri, Sanganakallu, Hallur, Maski and Palavoy revealed that the Neolithic period was followed by Iron Age (after a short span of breaking deposits). Though the knowledge of both copper and bronze was proven, those metals were scarcely encountered. Brahmagiri period I yielded a copper chisel, two small rods one of copper and another of Bronze along with hand made pottery, coarse gray fabric, painted and incised red and buff slipped ware. This layer was followed by Iron Age. Myladumparai is the only site that confirmed the Neolithic habitation in Tamil Nadu. Even though Paiyampalli and Modur excavations revealed the Neolithic implements, definite habitational deposit of that period has not been traced. The excavation at Myladumparai attested the continuous occupation of cultures of Neolithic and Iron Age. From the forgoing facts it is inferred that Chalcolithic culture was absent in Tamil Nadu and that period was substituted by Iron Age.

It is surmised that Iron Age people might have survived for a long period. Now one could approach the matter from the known period of Iron Age. It is said that Iron age appeared earlier in North India than in South, on the basis of the association of Iron with Painted Grey ware culture datable to 1200 BCE and that iron was introduced to south from there. But it is to be remembered that the availability of Iron has been restricted to stratified layers as pieces only in North. The industry was not represented as such. By contrast, in South India the usage of Iron was more than in North and also the ore and Iron slag were found in many places. Excavations revealed that this period was characterized by the introduction of rice cultivation and tank irrigation, basic metal technology, craft specialization, new pottery technique of dual colour, advanced knowledge of sepulchral architecture involving hauling of boulders, cutting of slates, making circular apertures in slabs, sense of direction etc. So it may be inferred that the wide spread usage of Iron first began in Tamil Nadu and spread to north. Abundant instruments and implements of warfare and agriculture were encountered in the Iron age/ megalithic burials. Excavated antiquities of Adichanallur and

Kodumanal are some very good evidences. Though the archaeologists give the upper limit as 500 BCE for Iron Age, by virtue of the above mentioned factors it is tempting to push the period still earlier. Emergences of State, and flourishing trade and culture as revealed by Sangam literatures of this period have also to be considered.

Another method can be applied for the dating of the signs, which is based upon the knowledge of writing of the people of Tamil Nadu. Brahmi is the script, which came into use about 5th century BCE is accepted by and large. Vallam excavation clearly marks the period of exclusive usage of graffiti before that period. Graffiti of Vallam, Sanur, Sulur, Mangudi, Alagankulam and other places prove their similarity with the Indus signs. But most of the graffiti except from Sanur and Sulur stand as a single sign. Though they look like Indus signs the importance of the present finding lies in the fact that it consists of four definite Indus signs incised in regular and continuous manner. The consistency has to be taken into account; hence Kandiyur signs may given a period where the writing of Graffiti had not yet started. It must have been written during the period in which the memory of writing Indus script was still prevalent but in decline. Each and every stage of above mentioned evolution in writing i.e., usage of i.) Indus signs, ii) Graffiti, iii.) Graffiti with Brahmi overlapping, iv) Brahmi (without graffiti) may be given at least 200 to 300 years. That means this engraving must have been made at least in the last quafter of 2nd millennium BCE. As argued earlier the period of Iron Age should also be pushed back and assigned to the same period.

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NEOLITHIC CULTURE IN KANCHIPURAM DISTRICT & ITS SIGNIFICANCE

G. Thirumoorthy

Neolithic culture is revolutionary in the history of mankind as it has transformed the man from mere food hunter to food producer. The settled life, pottery making, domestication of animals etc. were other achievements of the Neolithic period. This miraculous achievements in the human life is attributed to the favourable recent geological period known as Holocene 8000 B.P.

The Neolithic cultural vestiges have been mainly reported from the districts of Salem, Dharmapuri, Vellore and Tiruvannamalai where high hill ranges are seen. The reason for not reporting of Neolithic vestiges in other parts of TamilNadu especially on the coastal plains is not due to the absence of such hill ranges but due to lack of Archaeological explorations & Excavation works. In these circumstances it is necessary to mention here the discovery of a few Neolithic sites in Madurantakam Taluk of the District Kanchipuram.

DISCOVERY OF NEOLITHIC SITES

In the course of recent Archaeological exploration work in Madurantakam taluk, the southern part of Kanchipuram, District, the author has discovered two important Neolithic sites viz. i) Orathi and ii) Anaikunnam.

i) The village Orathi is located 25 kms to south west of Madurantakam town. It is known for Jaina beds. A small hill in the village has yielded Neolithic tools such as polished stone axes (celts) of dolerite rock. Most of the tools were fragments and they were rolled. It is necessary to mention that all the tools were firmly embedded on earth. The site also yielded tools of pre - Neolithic stage. A rubbing stone and a stone object probably used as fishing weight were also recovered. The Neolithic hand made thick coarse Red were sherds were collected. The site is also found with Microliths.

ii) The village Anaikunnam is located 5 kms to North of Orathi. It is studded with 15 rock crops to an average height of 25 mts. The site has yielded Neoliths of dolerite rock. Most of them were fragments. However, a fine Neolothic celt on the hillock and stream bed were found. Many stone sling balls were also found. The thick coarse Red were and thick black and Red ware sheards were largely found. The coarse Red ware shards were very much corroded.

Signification of the Discovery

The study shows that the Orathi must be a factory cum habitation site. The site Anaikunnam must have to be explored properly. The Discovery of these Neolithic sites is very much important as it reveals that the area with low hills and rock crops were also preferred by Neolithic man for settlement. It is deservable to mention that area without any hill or rock crop was also favoured the Neolithic man such as Arikamedu in U.T. of pondicherry. The study further reveals that hill ranges and grey ware pottery are not alone the criteria for the Neolithic culture in TamilNadu.

Hence a systématic Archaeological exploration work is to be taken up immediately to trace out the possible Neolithic cultural vestiges in other parts of Tamil Nadu to form a comprehensive account of the Neolithic culture.

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The Archaeological Exploration work was carried out in 1990's under village to village survey for antiquarian remains in Archaeological survey of India.

RECENT NEOLITHIC FINDS FROM DHARMAPURI REGION

S. Selvaraj

Dharmapuri District of Tamil Nadu have yielded rich Archaeological data on the pre and prtoto historic Cultures. It has varied physiographic characters and they are helpful to Study the Historicity of the place. The Hills, the rivers and the land enclosed by them are support to this point. This district is adjacent to Andra Pradesh and Karnataka states.

Robert Bruce Foote had collected Palaeolithic tools on the crest of the rocky trap dyke ridge near Bargur in 1887. After Foote, Dr. B.Narasimaiah had noticed five Neolithic Habitation sites at Gollapalli and Togarapalli in the Krishnagiri taluk of Krishnagiri district and Pannimaduvu. Dailamalai and Mullikadu Harur in Taluk of Dharmapuri District. He had also located two Factory sites of polishecl stone axes at Kappalavadi and Bargur. An intensive field exploration jointly undertaken by Dr. K. Rajan of Tamil University and the present author have also yielded one more Factory site in the same geological zone at Varattanapalli in Krishinagiri Taluk.

Generaly, the palaeolithic age was followed by the Mesolithic age and then Neolithic age . Though the Palaeolithic artefacts were collected by Foote, the microlithic tools were never reported so far from this district . But the recent excavations (2003) at Mayiladumparai have revealed a thick deposit with microlithic tools made from quartz and chert . The tool types include the arrow heads, blades, borers, burins, nunates, points and scrappers . On stratigraphical basis these tools are dated from 10,000 BCE to 3000 BCE. Infact, the Mayiladumparai excavation is more valuable as it reveals the habitational deposits and artifacts of four consequent periods such as microlithic. Neolithic, Megalithic and early historic.

Neolithic Evidences

Evidences of the Neolithic celts are found in several sites in this district. The Shift in the Neolithic settlement pattern is also reflected in the cultural materials . The material remains exposed in the rock shelters suggest an earlier date for Neolithic culture. It appears that the Neolithic people had first settled and lived in rock shelters and subsequently moved to the plains., owing to a change in their subsistence pattern.

The Neolithic Culture in Tamil Nadu had not attracted the attention of scholars inspite the occurrence of the polished stone axes from almost all the sites of this region . The shervaroy hill range in salem District could be a potential one which would provide crucial evidence on the Neolithic Culture of the region . The Shervaroy, Vattalmalai, the Kalrayan hills, and the Javadi hills have failed so far to reveal the traces of habitation of the Neolithic people . But they have yielded polished stone axes in large number . Infact, the Vattalmalai in Dharmapuri District has six villages on the top and the each village have yielded hundreds of polished stone axes. The same problem is occurring in almost all the sites in Tamil Nadu. It is widly believed that the Neolithic people had used number of geometrical and non geometrical stone tools in their daily life . But this region have yielded highly polished stone axes only. The excavations at Paiyampalli, which is located in Dharmapuri district border (Tirupattur Taluk of Vellore District) have revealed Neolithic pit dwellings and post holes indicating the existence of Circular shaped thatched huts along with few polished stone axes and few potsherds of pale grey and burnished grey wares, besides red ware in small quantities. Painted potsherd was completely absent.

Modur Excavations

Recent excavations (2005) at Modur in Dharmapuri District have shown considerable Neolithic Habitational deposits . Though the excavation results are inadequate to solve the several problems pertaining to the Neolithic culture in Tamil Nadu, it had supplied considerable material evidences to know the lifestyle of the Neolithic folk . In Modur, a smooth transformation from the Neolithic to the Megalithic is observed from the excavation . The occurrence of red ware, grey ware, brownware, tawn ware and painted potsherds and large number of stone implements like spheroid rubbers, round disc , oval discoid rubber , sharpening stone, polishing stone, grinders, grooved hammers , stone dabber, stone hip-hops, pestles, foot rings , saddle quern etc. clearly show that the Neolithic people of this area had led an advanced lifestyle. The materials and the technique of manufacture of such tools are worth considering . Tools are seemed to be used and reused over and over again for longer periods .

In Modur more than 500 stone tools were found, . By ignoring the small broken pieces, the finished artifacts and associated objects are taken for account . Most of the tools, were obtained in the Neolithic level and the level representing the period of overlap between the Neolithic and the Megalithic periods . It is noteworthy to say that several tool types from this excavation are simillar to the tool types obtained from the excavations at Piklihal, T. Narasipur and Paiyampalli etc., For the first time more than 30 spheriod rubbers , 17 celts , 16 oval shaped discoids, eleven pestles, 8 discoids in round shape, 3. grooved hammers and different types of grinders etc., were collected from Modur excavation. This much of Neolithic stone tools were never reported from any other site in Tamil Nadu. The date suggested for the Neolithic Cultural phase goes to 3000 BCE to

1000 BCE.

One more Neolithic Habitation Mound was recently discovered by the present author in this district. It is located at the foot hill of Pikkanahalli village of Palacode taluk on the southern bank of the river Chinnaru. The Pikkanahalli mound seems to be a Neolithic Habitation Mound as the intensive exploration on it reveals large number of Neolithic tools such as celts and discoid rubbers etc.

The Neolithic Culture in Dharmapuri region is represented in habitation sites at Gollapalli, Togarapali in Krishnagiri taluk and Modur in Palacode Taluk, Mullikadu, Pannimaduvu and Dailamalai in Harur taluk and Mayiladumparai in Pochampalli taluk.

From the study of the ceramic and lithic industries from various sites, it is evident that there are three distinct artifactual groups in the Neolithic culture in the region. One is dominated by a coarse red ware, associated with microlithics comparable to the Late stone artifacts. Secondly prominent ware is coarse red ware, burnished grey ware with microlithic Blades make their appearance. Thirdly painted potsherds, tan ware and grey ware are the prominent ceramics . Modur site yielded also a painted sherd, comparable to the painted ware of Piklihal dressed and burnished red ware of Kodekal, and the painted ware encountered at Brahmagiri, all in Karnataka basic Deccan Neolithic area, from which Salem, Dhamapuri subsidiary technique of the classic Neolithic industry are common in all the three groups in Dharmapuri District.

In addition to the habitation sites of the Neolithic Culture, regular factory sites of the pecked and ground Industry of the Culture allso have been noticed in this region.

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EXCAVATION OF THE HARAPPAN MOUND AT BHIRRANA

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The Harappan mound situated in the northern outskirts of the village, Bhirrana, (Lat. 29°33' N; Lung. 75° 33' E.) Dist. Fatehabad, Haryana, was excavated continuously for three seasons (2003-04, 04-05 & 05-06). This has resulted in the discovery of an unbroken vertically evolving four fold cultural phases of the Harappan civilization: Period IA - Hakra Wares Culture, Pd IB - Early Harappan Cultures; Pd IIA - Early Mature Harappan. Pd. IIB - Mature Harappan (Pl.I). (Rao et al 2003-04, 04-05, and 05-06). In this paper an attempt has been made to highlight some of the significant contribution, the Bhirrana excavation has made to the knowledge of Harappan studies.

1. Discovery of the Hakra Wares Culture

The excavation of Harappa and Mohenjodaro in 1920-21, 1921-22 brought about revolutionary changes in the understanding of Ancient Indian History and Culture and simultaneously pushed it chronologically back to the 3rd millennium B.C. Since both the exposed cities displayed attainment of a high degree of civic standards, it was obvious that the scholars were curious to know about its antecedent culture or stages of evolution. Due to inherent constraints faced at both the sites, it could not be possible to unfathom the cultural deposits of earlier periods. This did not dater the scholars. Concerted efforts of the archaeologists of both, India and Pakistan have yielded fresh material, which enjoy chronologically antecedent dates to those of the Mature Harappan. That is how the sequence of culture in reverse order, i.e. Mature Harappan preceded by transitional / Early Mature Harappan culture, followed by Early Harappan / Kotdijian culture, were identified. However, discovery of a large number of Hakra Wares sites (nos. 99) in the surrounding areas of currently dried up river, Hakra (up stream of which on Indian side is called Ghaggar - Saraswati) in Bahawalpur area of Cholistan region (Pakistan) in the beginning of 1970 (Mughal, 1997: 42-43), further added one more antecedent stage of evolution of Harappans. Thus, culturally and chronologically this discovery pushed back its date to the middle of 4th millennium BC. Though, not a single site in Cholistan is excavated, but the stratigraphic position of the Hakra Wares was found to be below that of the Kotdijian / Early Harappan phase, from the excavation of Harappan site at Jalilpur near Multan in

Pakistan. Thus, the people using the Hakra Wares were proved to be the predecessors of the Early Harappans. But, on the Indian side, major excavations carried out at sites like Kalibangan (B.B, Lal et.al.2003), Banawali (Bisht 1982, pp115-116) and Rakhigarhi (Nath, 1998-99; 46-49; 2000-01; 43-45), all located in the Ghaggar - Saraswati basin in India, have not revealed Hakra Wares cultural horizon. Rather, these wares appear only as associated wares during the Early Harappan Period. Another important excavated site is Kunal, which has yielded Hakra Wares in its early level, i.e. Period IA. (Khatri & Acharya 1994-95; 84-86). But no claim is made for the existence of an independent stratigraphic horizon for the Hakra Wares culture. The Period IA along with IB & IC has been considered to represent as an exclusively rural settlement where the Early Harappan gradually metamorphosed into the Mature Harappan Period.

Against this background, the exposition of an independent horizon of the Hakra Wares culture at Bhirrana, for the first time on Indian side, in itself is a significant discovery. Further, this excavation has provided sufficient information regarding the socio-economic life style of the Hakra Wares people (Rao 2006: 33-42). Being the earliest occupants on the left bank of the, now, dried up course of the river, Saraswati, these inhabitants preferred to live in subterranean shallow circular pits cut into the natural soil (Pl.II). These pits are invariably found in clusters and are of different dimensions. They were used for different purposes as indicated by the nature of material remains recovered from them. Dwelling pits are shallow and vary in depth from 34 to 58cms, whereas the diameter varies from 230 to 340 cms. The walls and floors of these pits are plastered with yellowish alluvium. Such pits appear to be sufficient to accommodate 3 to 4 persons. These dwelling pits do not have post-holes around them, yet there is direct evidence to the existence in the form of burnt clay lumps with reed marks to the existence of humble super structure constructed of wattle and daub. Surrounding these dwelling pits, other auxiliary pits, smaller in diameter ranging from 200-230cm and 80 to 108cm in depth served different purposes, such as, for sacrificial (Pl.III) / kitchen / industrial activities, and to dump refuse (see Rao Ibid).

In course of time, these pit dwellers abandoned the use of subterranean dwelling pits and chose to raise huts over ground as is evident from a partly exposed rammed floor of a circular hut with a chullha by its side (Pl. IV).

As this culture is named after a host of wares recovered from the Hakra basin, as such, the ceramic industry includes varieties of pottery types, such as Mud Appliqué Ware, Deep Incised and Light Incised Wares, Brown on Bulf Ware, Bi-chrome Ware, Black on Red Ware. (Rao, 2006 ibid also see Rao et al 2004-05)

There is an absolute dearth of detailed information regarding the settlement pattern of the Hakra Wares people from Cholistan region as none of the explored sites is excavated so far, But based on the surface configuration and material remains collected from those sites Mughal has classified them into two catego-

ries, such as camp sites and permanent settlements (Mughal 1997; 42). Even the excavations at Harappan and Jalilpur have not added much architectural information except for a few badly damaged rectangular floors and circular pits with post-holes at the former and a few rammed earthen floors on lime bedding at the latter. On the other hand Bhirrana excavation has brought to light a systematically cut and prepared clusters of pits as residential complexes, which follow a definite pattern so far as their functional utilization is concerned. Such pits are exposed on a large area of the site i.e. area covering the northern, central and western parts of the mound. (Rao 2006, Ibid).

The material culture recovered from the Hakra Wares cultural deposit reflects a well-established rural life of the people. They were well conversant with coppersmithy as revealed by the occurrence of a large number of damaged crucibles. However, so far only one copper bangle is recovered from this period. It is interesting to note the presence of beads made on lapis lazuli, carnelian, agate and terracotta (Pl.V). These, especially lapis lazuli beads speak about the prevalence of long distance trade and transportation activities even in such remote past. Considerable quantity of terracotta bangles of both grey and red colour are recovered. Other noteworthy objects of interest of this period include a number of sun-baked spherical clay lumps, a few of them being roughly triangular in shape and partly baked in fire; fragment of a sun- baked clay cake with nail incisions and *idli*-shaped terracotta cake with thumb impression in the centre of the top portion. Therefore, in the present state of knowledge as received from the Bhirrana excavation, we may trace the origin of triangular and other shaped terracotta cakes of the Mature Harappan of later period to the Hakra Wares period. Equally significant find is an unbaked, but damaged, clay toy cart frame of solid variety. It may also be remarked that the tradition of manufacturing unbaked clay objects, such as, lumps, cakes or for that matter any object during the Hakra Ware culture, indeed, was an inherited practice from the past. Such practice of manufacturing clay objects has been reported during the Neolithic Period at Mehargarh (Jarrige 1982 P.83). The occurrence of stone objects like pestles, pounders, rubbers, sling balls, bone points and chert blade formed their tool kit. The excavation has revealed that the Hakra Wares community was not only agrarian but also supplemented their diet by hunting wild animals and also utilizing the domesticated animals as reflected in the collection of large quantity of charred bones from these levels. Marbles made on terracotta and stone, hopscotch on red potsherds along with an unfinished terracotta animal figurine represent children's games and toys. It is from this stage of village life, the Hakra Wares people, in course of time, with the help of new ideas and technology gradually evolved themselves into the stage of Early Harappan Culture. As such, one can trace the roots of pottery, terracotta cakes, copper technology, and other technologies of arts and crafts belonging to the subsequent stages of evolution i.e. the Early Harappan or Early Mature Harappan or Mature Harappan, into the Hakra Wares culture.

Early Harappan Period

The succeeding Early Harappan Culture witnessed a significant transformation in structural and material development. The habitation was expanded and the entire site came under occupation, but without a fortification wall. The actual layout could not be made out due to the overlying cultural deposit coupled with restricted operational areas. The houses were built of mud bricks in the ratio of 3:2:1. In addition to the known six fabrics of Kalibangan - I, the ceramic repertoire of this period show the continuous use of the Bi-chrome Ware, Deep and Light Incised Ware and Tan / Chocolate Slipped Ware of the preceding period with a little morphological change. Among the important finds of the period are two seals (Pl.VI, 1,2) - one each of shell and steatite - with no icon and legend; arrowheads, rings and bangles of copper; beads of carnelian, jasper, steatite, shell, lapis lazuli and terracotta; bangle of terracotta (plain and segmented) and faience; sling ball; bone point; marbles and pounders of sand stone; chert blades; terracotta toy cart frames and wheels. Besides, terracotta Mother Goddess and fragments of unbaked clay Mother Goddess represented by torsos and limbs were recovered from this level. Animal sacrifices continued to be practised during the period.

Early Mature Harappan Period

This period represented the gradual transformation of the Early Harappan into the Mature Harappan culture. The entire settlement was reorganized and reoriented and brought under a general fortification wall. The concept of twin units of town planning i.e. citadel and lower town with streets, lanes and bylanes, and house complexes came to be introduced. The pottery of the period shows a mixture of the Early Harappan and Mature Harappan assemblage. The Bi- chrome Ware is on its decline. But, with a little modification Hakra Wares continue to survive. The antiquarian remains are rich and varied in comparison to the earlier period. The lapidary industry became more active during the period as represented by a number of caches of beads of various semi-precious stones, especially those of carnelian. Equal proliferation can be seen in copper objects. They include arrow-heads, fish hooks, chisel, antimony rod etc; the other antiquities include the bangles of faience and terracotta; chert blades; ball, marbles and net sinkers of terracotta; a terracotta cot; terracotta toy cart frames and wheels with painted spokes as well as in relief; stone querns and mullars; triangular, *idli*- and oval shaped terracotta cakes with finger impression on its sides.

Mature Harappan Period

This period marks the emergence of the fuli fledged Mature Harappan culture as reflected in cultural remains. The city layout of the preceding period was retained with a little modification in its orientation. The already existing fort wall with bastions of the preceding period was strengthened and enhanced the height

of the same during this period. The exposed fortification wall include northern, western and partially southern side arms, and the remaining eastern and southern arms could not be traced due to destruction of the mound. Interestingly, the earlier entrance gateways were blocked, but in its place a burnt brick drain to drain-out storm water was provided in the northern arm of the fortification wall enclosing citadel area. Now the entrance gateways were shifted to the southwest corner and southeast corners of the fort wall. Both fortification and house complexes of the period are built of mud bricks of yellowish colour and they fall in the ratio of 4:2:1. Burnt bricks are used for constructing bathroom and drain. Both citadel and lower town have major streets (Pl.I&VII), lanes and bylanes intersecting one another, thereby creating various blocks accommodating clusters of houses of different dimensions. But here was no regular drainage system, instead, the sullage jars were found embedded in the streets. The built up area of this period was also found beyond the fortification wall. The classical Mature Harappan pottery is represented by the Red Ware, Red Slipped Ware and Chocolate slipped Ware. The shapes in these fabrics include vase, S-shaped jar, and button-based goblet, beaker, jar, dish-on-stand, bowl, chalice, knobbed lid and perforated jar. The typical Harappan geometric, floral and faunal motifs are mostly painted in black over red surface. Besides, the fabric D and F of the Early Harappan, the Hakra Wares too continued to be in use. The important antiquities include good number of typical steatite seals with iconographs and legends; inscribed copper celts; varieties of beads made on semiprecious stones; various copper objects like bangles, celts, chisels, fishhook, antimony rod, rings, etc. terracotta animal figurines like bulls, ram, fox etc; birds; chert blades; stylized terracotta animal head with horns; terracotta tiles; terracotta toy cart frames and wheels with painted spokes and relief spokes; cubical weights; bone points and awls; mullers, pestle, pounders, sling balls of stone. The cult objects made in terracotta include an ithyphallus and Mother Goddess. Besides, large quantity of palaeo-botonical samples of charred grains of wheat, barley and pulses were collected.

However, this phase at Bhirrana has produced some of the important antiquities, which are briefly dealt with in the following paragraphs.

Stylised Terracotta Animal Head with Horns (Pl.VIII; Fig.1&2)

Ever since the discovery of Harappan civilization a particular type of antiquities, have been ordinarily treated and termed as terracotta toy cart frames. But, in reality, these antiquities do represent an important ritualistic object, shown mostly as horn head gear of a divine or semi-divine figurines engraved on the seals, and as painted horned deity on the Early Harappan pottery. (Lal. 1997, p.64&80; Kenoyer 1998, p.46). Besides, some of the terracotta human figurines with horned headgears are reported from Mohenjodaro (Mackay 1938 PP 266-67) and Harrapa (Vats 1940,PP296 and 299). Now lets us know in detail about these objects. The Bhirrana excavation, especially from the Mature Harappan level has yielded number of highly stylized terracotta animal heads with rising incurved

horns, some in their completeness or in mutilated condition. (Rao, 2004-05: PP 68-75). In these examples, the head or snout portion is represented by a rectangular projection with faint concave sides at the bottom, upon which along the marginal sides of the broad forehead, rise incurving horns. But, in certain cases, there are no rising horns, but abrupt terminal ends on sides. A few of these objects bear cross bands, at regular intervals, painted in black/chocolate colour and in some cases these bands are painted all around the horns. Another interesting feature of these objects is the presence of a bold perforation on the snout portion and varying number of perforations of different dimensions provided in horizontal alignment over the forehead and further extended on to the horns. These holes were bored when the clay was in the leather hard condition during the pre-firing stage. A few of these horns show both, pre - firing and post-firing deep and shallow grooves cut on the inner face of horns. A most interesting feature that has lent an element of realism to one such highly stylized object is the presence two blind perforations as nostrils with a dividing shallow depression in between them on the lower part of the snout. This is indeed a close imitation of the upper lip of cattle. A similar object with nostrils has been published as toy cart frame from Lothal (Rao 1985, 504). A Harappan site at Baror in Hanumangarh District, Rajasthan, recently excavated by the Archaeological Survey of India in the years 2003-04 and 2004-05, has also yielded similar terracotta objects, but the excavators have preferred to call them as toy - cart frames. Similar objects from Dholavira have also been placed in toy cart frame category.

These objects can not be considered as toy cart frames for the simple reason that unlike the known terracotta toy cart frames found from all the Harappan sites these objects do not bear transverse perforations either on longitudinal or latitudinal plane to receive main shaft or axle.

Identical objects, though only in mutilated conditions are reported from the Late Harappan sites in the Cholistan region by Mughal, who termed them as "Crescent-shaped pendants of pottery with perforation". He also refers to an unpublished report on Ghaggar-Hakra (1943) by Aurel Stein who called such objects as "hangers." Further, Mughal informs, "One complete specimen from Harrapa, not illustrated by Vats, is preserved in the National Museum of Pakistan, Karachi under accession no. 54, 3870/12887. It has six perforations" (Mughal 1997). However, it may be remarked that in case of the photo illustrations of Mughal under reference, the objects from Cholistan are put upside down to look like a "pendent." Since such objects were already termed as " hangers " by Steinin the past, Mughal appears to have followed the clue and settled down to the term " Crescent-shaped pendants." Hence, the upside down placement in the photographs.

Having identified these terracotta objects as stylised animal heads with horns, the question now would be, with which animal such horns could be associated?. To begin with, these heads are certainly not those of bull or cow, since their horns (in reality) are circular in cross-section. It is needless to state that the Harappan

craftsmen have carefully adhered to the principles of realism while carving the anatomical details of animals on their seals. As a testimony to these principles, the horns of Brahmani bull and short horned bulls are invariably shown as circular in cross-section and without any segmentation. Even their terracotta counter parts have horns with circular cross-sections. It is also important to note that in the present collection, none of this stylised specimens have horns with circular cross-section, but, instead are rectangular. Further, as already stated above, a few stylised animal heads with rectangular horns bear cross bands painted in black or chocolate colours. These bands, instead of being just decorative motifs, are, in fact, symbolic and suggestive in nature. At this juncture, it is of interest to note here that the Harappan craftsmen have invariably used incised lines to imply the growth lines of horns of buffalos carved on their seals. Further, we may recall that such incised horn-headgear adorns the so-called *Pashupati* or proto-Shiva or similar figures carved on the seals. At the same time, it may be noted that there is no dearth of un-incised horned divine figures of both seated and standing postures on the seals (Mustafa Shah and Parpola 1991), as well as horn-headgear bearing terracotta human figurines. (Mackey 1938 Ibid; Vats, 1940, Ibid). Therefore, the black bands on these terracotta objects do represent the highly stylised growth lines of buffalo horns rather than being mere decorative motifs.

Thus, here are some stylised terracotta objects, which stand as symbolic representation of horn headgear, which were utilised, in day-to-day ritualistic practices of the religion prevalent in the contemporary Harappan society. It may be opined that such horn-heads might have been used by the priestly class or the people who were really engaged in performing rituals by way of tying them on their heads or foreheads. A number of holes on the body of these objects also stand for their functional utility i.e. for decorating them with tassels of feather or Pipal Leaf or some such material and also to insert a fillet or headband for fastening around the head of an individual.

Emergence of spoked Wheels

It is of great significance that the early Harappan period witnessed the introduction of plain terracotta toy wheels of solid variety at Bhirrana. But, it appears that the gradual technological advancement within the Harappan society gave rise to the production of spoked wheels during the Early Mature Harappan period (i.e. transition from Early Harappan to Mature Harappan period). And finally the Mature Harappan period witnessed a fully bloomed spoke-technology as illustrated in the spoked terracotta toy wheel models recovered from Bhirrana. (Rao, 2005-06,PP 59-67)

A cursory glance of terracotta toy wheels of Bhirrana reveal that the wheels of the Early Harappan and Early Mature Harappan period are uncouth in making and smaller in size. Whereas sophistication and variation in sizes are the hallmarks of the terracotta toy wheels of Mature Harappan period

Further, from a detailed analytical study of terracotta toy wheels of Bhirrana excavation these objects can broadly be divided into two categories:

I. Painted terracotta toy wheels
II. Non-painted / Plain terracotta toy wheels.
These are further subdivided as under:
Ia. Terracotta toy wheels with painted spokes.
Ib. Painted models of solid terracotta toy wheels.
IIa. Terracotta toy wheels with spokes in low relief.
IIb. Non-painted / plain models of solid terracotta toy wheels.

Ia. Terracotta toy wheels with painted spokes
(Fig.3.1-14; Pl. IX.1-14 & Pl. XI.1-10)

In this class of painted wheels the bands painted in black/chocolate stand for the spokes, which emanate from the central hub and radiate like rays towards the outer rim of wheel. But as an exception a broken wheel betrays partially preserved plus mark on its outer face (Fig. 3.14; Pl. IX.14). Terracotta toy wheels with similar plus marks have been reported from Lothal and identified as spoked ones. (Rao 1985, p. 511, Pl. CCXXII B, 1&3). Not contended with painted spokes only on the outer face, to make it doubly sure, craftsmen replicated painted spokes on the inner face too (Fig. 3.1-3, 5, 8-13; Pl. XI.1-10). Similarly a couple of wheels bear plus mark on their inner face also (Fig. 3.2, 13) Apart from fragments, fortunately we have three intact terracotta toy wheel specimen bearing painted spokes on both sides (Fig. 3-1, 3, 12; Pl. IX.1, 3, 12 & Pl. XI.1, 3, 9).

Yet their exist an interesting damaged terracotta toy wheel with spokes on both sides, wherein the positioning of painted spokes emanating from the hub calls for a detailed explanation (Fig. 3.8; Pl. IX.8 & Pl. XI.5). Herein lies a double row technology of spokes drawn around the hub. A series of spokes radiating in slanting position were drawn first, over which another row of radiating vertical spokes were superimposed. This superimposition of spokes has lent mesh-like look, but in reality, they are not interwoven. Similar arrangement of spokes is also painted on the inner face, though in a highly exaggerated manner. Strangely this kind of double row spokes arrangement is nearly similar to that of the spokes of modern bicycle wheel!

Ib. Painted models of solid terracotta toy wheels

(Fig. 4.1-10; Pl. X.1-10 & Pl. XI.12, 13)

Paintings on pottery and other antiquities, besides being decorative also stood for symbolism and thus suggestive in nature. Those concepts, which are simple and quickly grasped like spokes in a wheel, could be implied through radiating bands. But, in contrast to this, we need special motifs to distinguish solid wheel

from spoked wheel in their painted model forms. Interestingly the first confirmation of the use of solid wheels during the Harappan period came from a painted model wheel from Chanhu-daro (Mackay, 1943, PP 162-63) Here, a broad band of paint in the middle of terracotta model wheel is drawn in such a way that the painted bands on both sides coincide. But craftsmen of Bhirrana, it appears that instead of simple motif, has chosen to be more artistic and elaborate in implying the solid nature of wooden planks used for construction of wheel. At least three types could be noticed here.

1. In this category, a common schematic painting is drawn on either sides of wheel intentionally to indicate coincidence of similar look of solid surface. Keeping hub in the centre, both outer and inner faces of wheel are divided into four equal quadrants by drawing a bold plus mark. Further, each quadrant is occupied by a semicircular arch whence vertical/slightly oblique multiple strokes run towards the peripheral end of wheel (Fig.4.1, 8; Pl. X.1-8 & Pl. XI. 12,13).

2. In this category too, keeping hub in the centre multiple parallel lined two sets of horizontal and vertical bands are drawn in such a way so as to form a square. In certain cases this designs looks like a trapezium or triangle (Fig. 4.2-7; Pl. X.2-7). Hub is invariably covered with circular painted bands. Similar painted terracotta toy wheels are also reported from Mitathal (Bhan, 1975 p. 68, Pl. XXI,?), Banawali (Bisht, 1987, p 150), Harappa (Vats, 1940, p. 451; wheeler, 1947, p.129 , Pl. L B, 3).

3. Besides there are a few examples of terracotta toy wheel having painted multiple, parallel, horizontal bands running across the outer face (Fig. 4.9-10; Pl. X.9-10).

These multiple parallel lined sets of painted motifs on their horizontal and vertical planes may represent three solid wooden planks used in the construction of wheel. Or, as postulated by Mackay, in order to hold all three pieces together and strengthen the wheel, "Doubtless tenons were used, but alone these would not have sufficed to hold the wheel together, and lashings or battens of some kind must also have been employed" (Mackay, 1943, p. 162). Thus, these multiple parallel lines may stand for lashings are battens. Here too craftsmen of Bhirrana were realistic in their approach as we have terracotta wheel examples bearing replication of such lashings or batten motifs on the other face of the wheel (Fig. 4.4; Pl. XI.13)

IIa. Terracotta toy wheels with spokes in low relief

(Fig. 5.1-20; Pl. XII.1-20)

In addition to terracotta toy wheels with painted spokes, there is one more class of spoked toy wheels where it is not in paintings, but in relief, spokes are simulated. Here lies the ingenious skill of Harappan craftsmen, which has not costed them extra. The technique involved herein is as simple as pressing of

finger in a radial fashion around the hub when clay was wet. This leaves behind a corrugated surface on the outer face. The raised ridges of such corrugations resemble spokes. Two such examples have already been published from Banawali (Lal, 2002, pp. 72-73, Fig. 3.30). Incidentally, it may be observed that the outer face of a terracotta toy wheel, which forms part of a mounted terracotta ram from Chanhu-daro, betrays distinctly similar features of simulated spokes in relief (Kenoyer, 1998, p. 228 cat. No. 161). However, such features on terracotta toy wheels have gone unrecognised. Fortunately, now, Bhirrana has yielded considerable number of terracotta toy wheels with spokes in relief.

IIb. Non-painted/plain models of terracotta toy wheels

This category of terracotta toy wheels are large in numbers and bear all those features, minus paintings, described under the general characteristic features (Rao 2005-06,Ibid). Therefore, they have been treated, here, as non-painted models of solid wheels in general, as such are not illustrated separately. However a few of them have lynchpin groove marks on the hub.

Apart from the above classifications of terracotta toy wheels there exists a solitary example, which makes a class of its own. Herein lies the smartness of Harappan craftsmen. In this example motifs as represented on the above described models Ia and IIa are combined together to emulate spokes in relief on outer face and painted spokes, on inner face (Fig. 5.21; Pl. XII.21 & Pl. XI.11)

Lynchpin grooves

(Fig. 3.3,4,6,8,12; Fig. 4.1,4; Pl. IX.3, 4,6,8,12 & Pl. X. 1,4)

The presence of lynchpin groove marks on the outer face of hub of terracotta toy wheel from Bhirrana is an important feature to be taken cognisance of while understanding functional relationship between axle and wheels during the Harappan period. In this context it is pertinent to note the observations of some scholars. To quote, "wheels of the Sumerian vehicles were built up from more than one piece of wood, and very much the same form of construction must be imagined for the wheels of the vehicle used by the Indus valley civilisation, specially as the wheels of the modern Sindi cart closely resemble those of Sumer, and like them were fixed to an axle that revolved with them" (Marshall, 1931, p. 554). The same opinion is still being held by other scholars too (Kenoyer, 1998, p. 89). Differing a little from the aforesaid opinion, Mackay contended that the model wheels of Mohenjo-daro closely resemble those wheels that are being used in the modern Sindhi cart wherein one wheel is fixed to axle and the other revolves. Further he says, "— — — these wheels — — — show sign of wear in the axle-hole which suggests that some of them at least revolved on their axles." (Mackay, 1938, p. 568). In view of this it is of great significance to note that for the first time terracotta toy wheels of both solid and spoked varieties from Bhirrana bear lynchpin marks in the form of crossed-grooves on the outer face of hub. From practical point of view lynchpins are provided on the extreme ends of axle rod so

that wheels will not fall off while revolving around the axle. Since the axle bearing lyinch pin sockets have not survived, it appears the craftsman very intelligently devised a means to show their symbolic presence by these grooves. This fully establishes the fact that the wheels were definitely revolving around the axle and not fixed to the axle as surmised on the basis of modern Sindhi carts.

It has been strongly believed by a section of scholars that Harappans did not use spoked wheels at all. If at all the spoked wheels arrived in the Indus valley it was only during the post-Harappan period, which is equated with the period of so called immigration of Aryans in India. But, considerable number of both painted and relief spoked terracotta toy wheels in varieties of forms from Bhirrana has firmly dispelled all the misconception about the existence of spoked wheels during the Harappan period.

However, in fitness of the situation, it may be observed that besides Lothal in Gujarat, majority of the sites like, Kalibangan, Banawali, Bhirrana, Rakhigarhi, and Mitathal, which have yielded, spoked terracotta toy wheel models so far, fall within the Saraswati-Ghaggar-Hakra and Drishadvati valley. But, in contrast, such spoked wheels have not been reported from the Indus valley so far. Then, what could be the reasons for their absence in the Indus valley? It needs a thorough probing. Let it be as it is. In the present state of knowledge, reality is that spoked wheels not only rattled down the streets of Bhirrana but also widely used in the Saraswati-Ghaggar-Hakra and Drishadvati valley during the Mature Harappan period.

Thus, the Excavation of Bhirrana has the distinction of providing clear picture of the four stages of evolving Harappan culture beginning with the rural Hakra Wares culture and ultimately terminating with the city culture of the Mature Harappan period.

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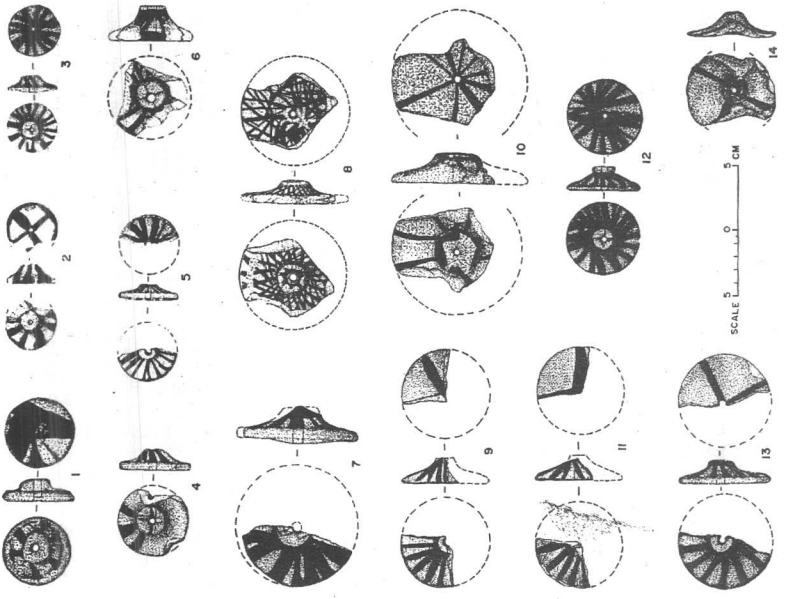

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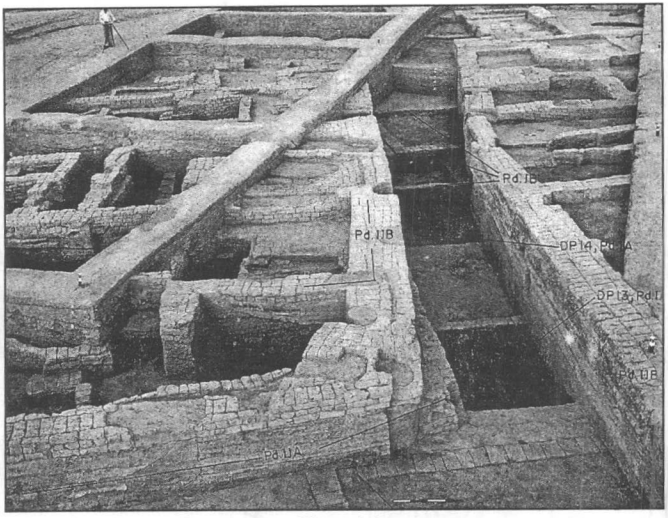

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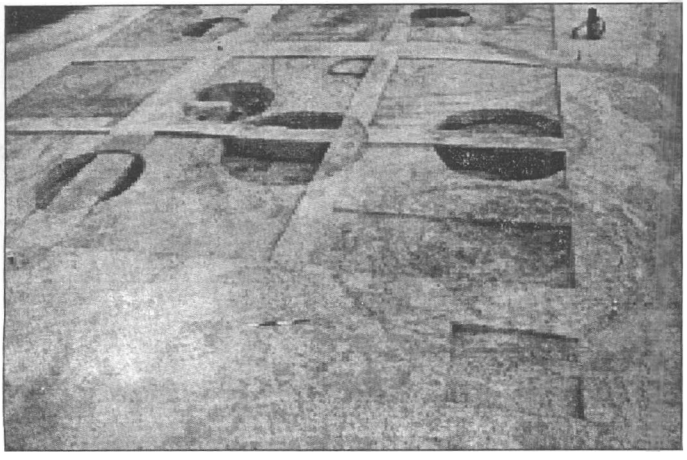

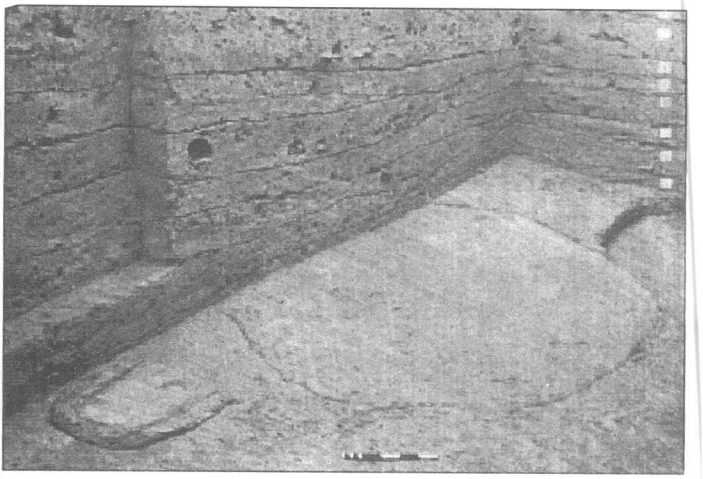

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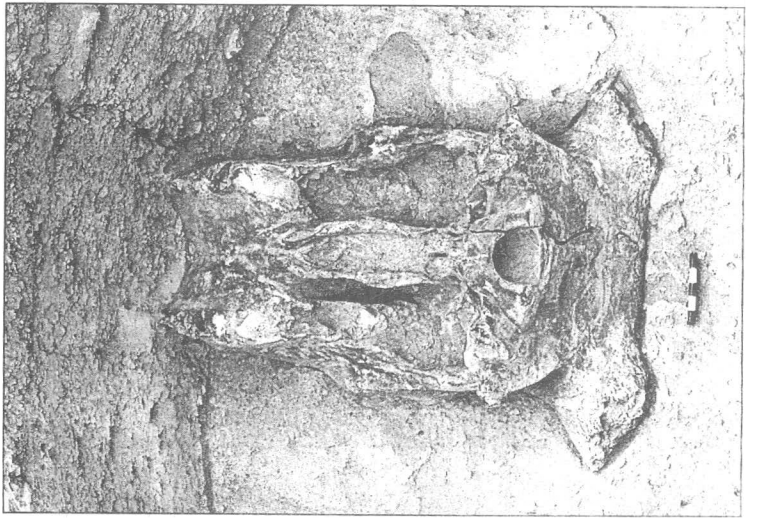

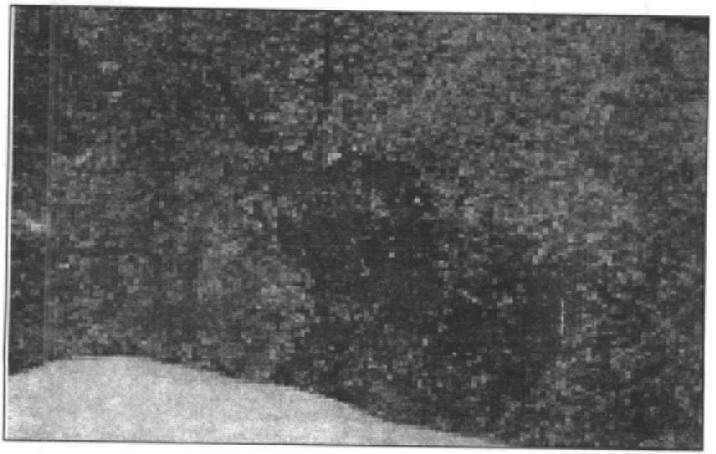

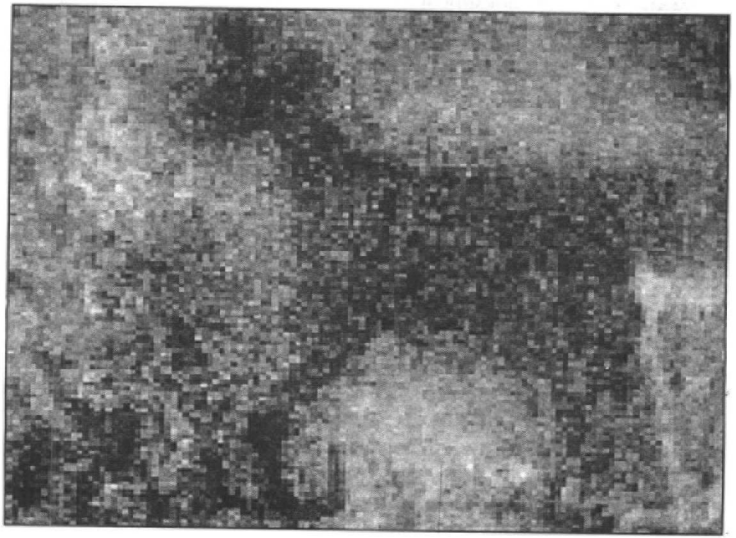

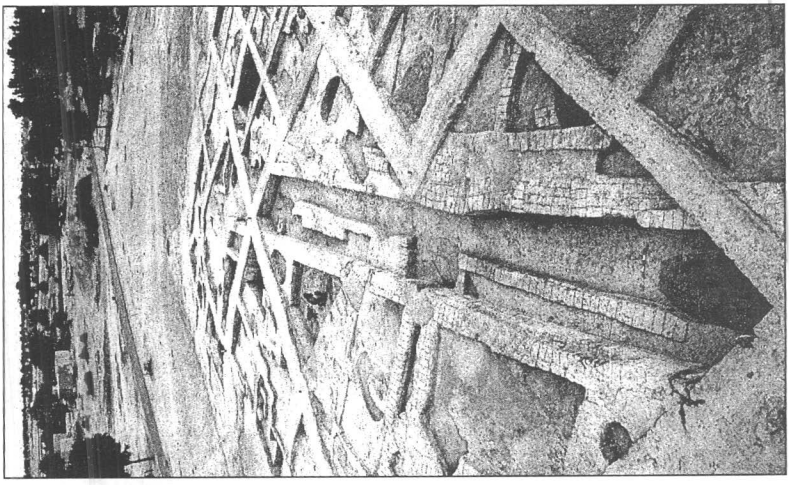

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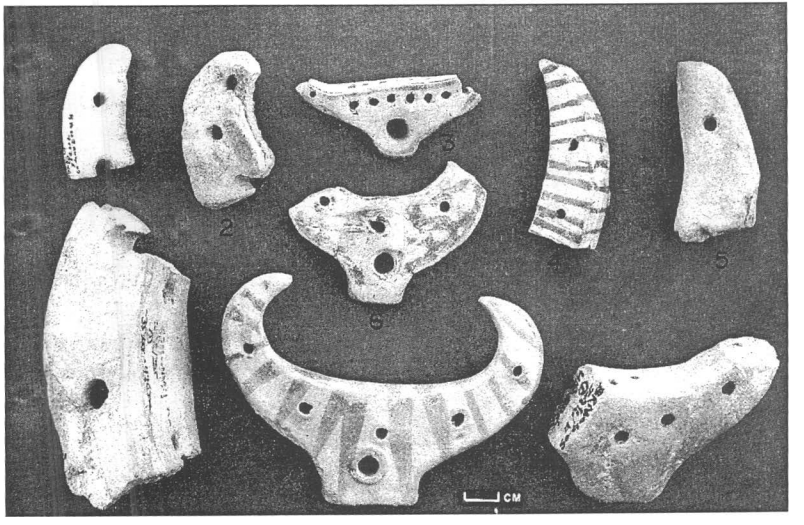

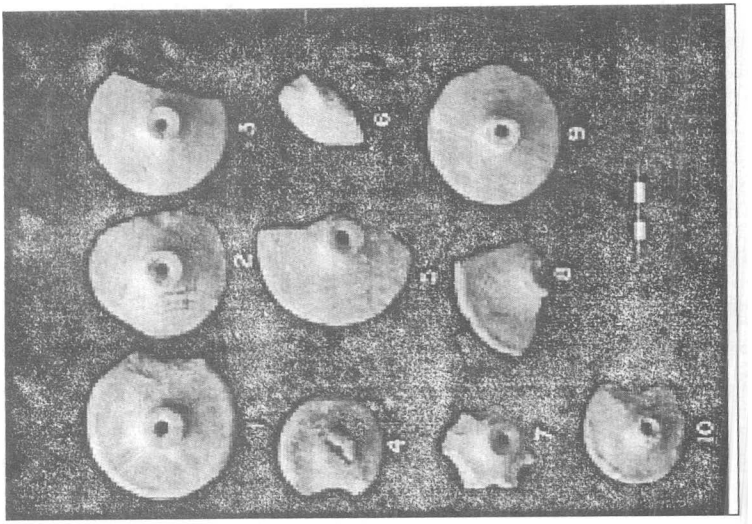

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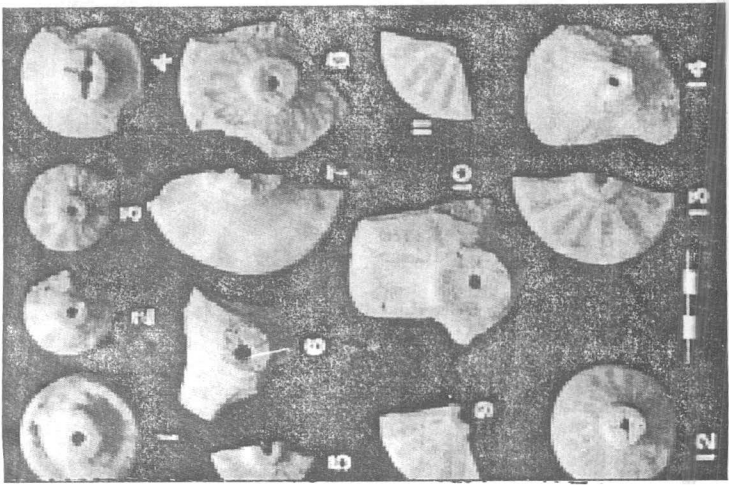

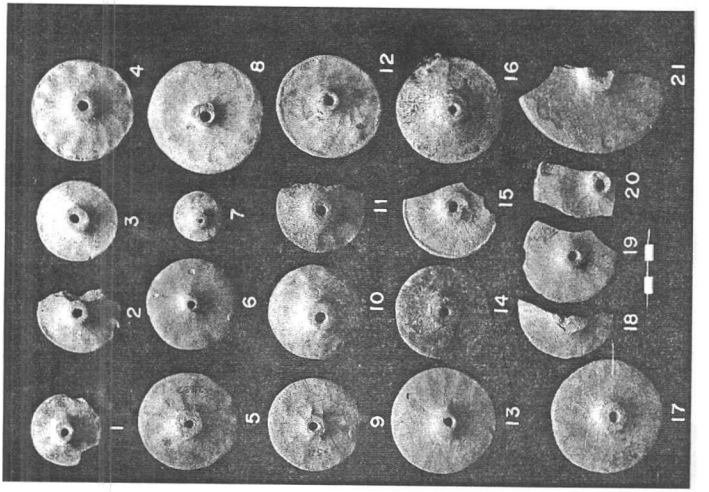

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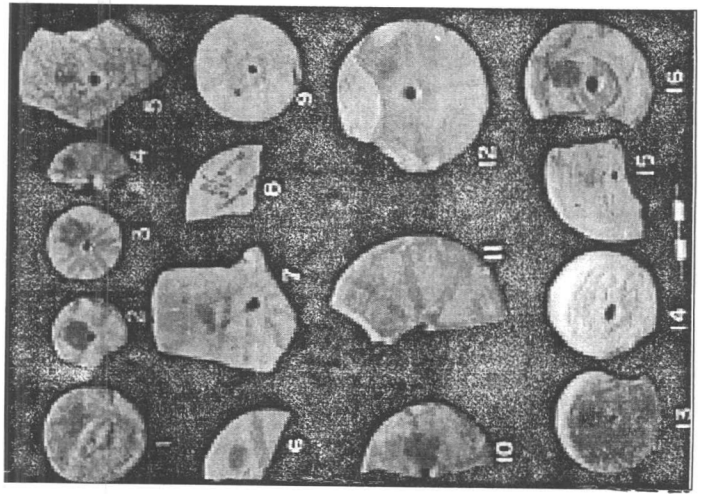

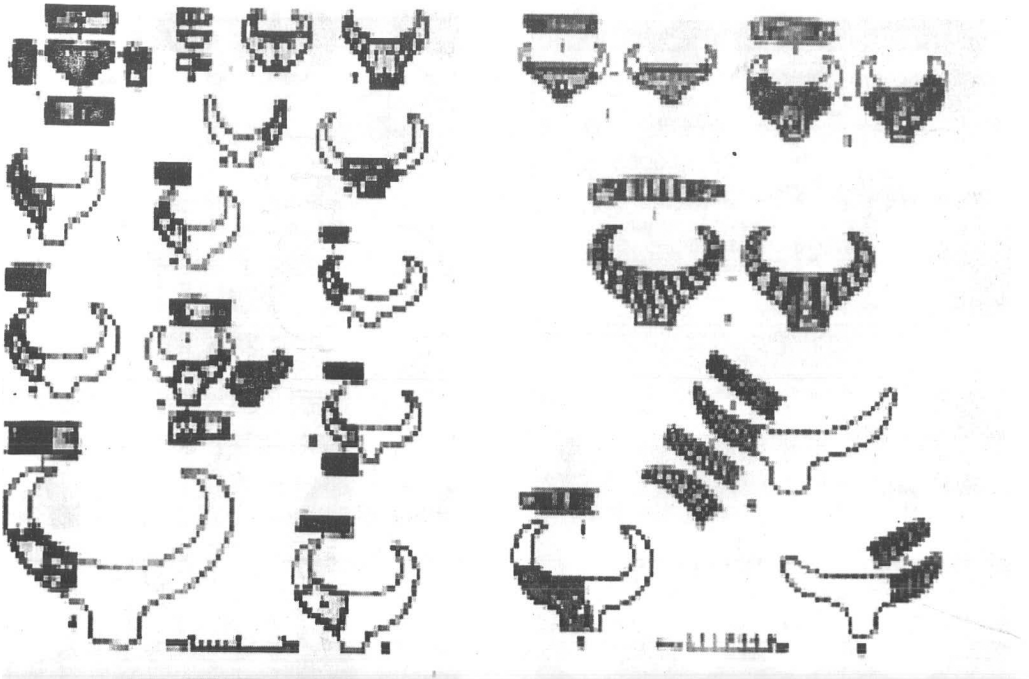

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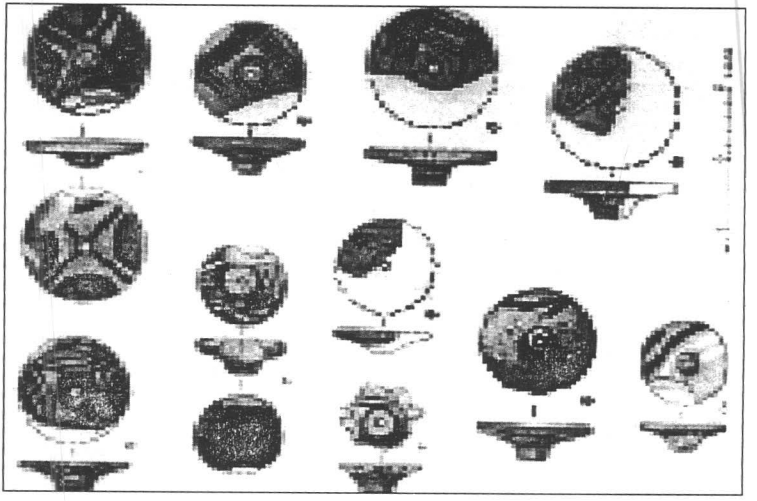

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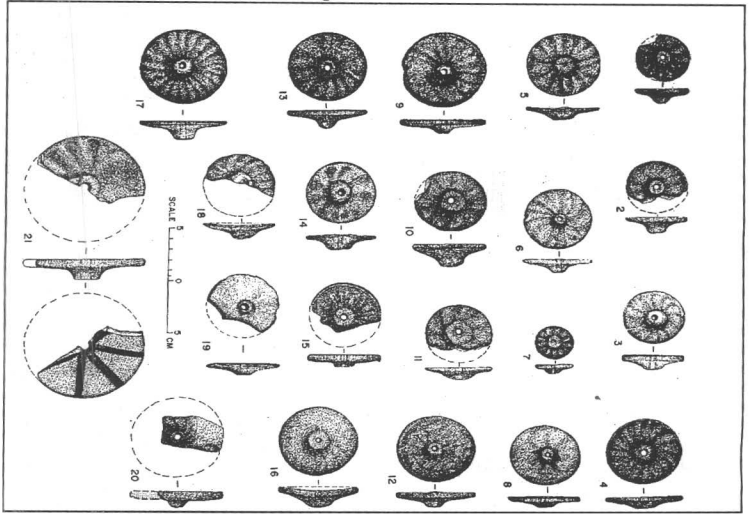

RECENT NEOLITHIC CELT WITH LEGEND AND ITS PARALLELS

Ramesh S. Mulimani

As we all know well that Indus Valley civilization is completely depending on two major sources i.e.

01. Archaeological sources

02. Literary sources

So, let us see the importance of them one by one.

01. Archaeological Sources

It was already confirmed from the archaeological sources that many Harappan Sites are discovered in India and Pakistan like Harappa, Mohanjodaro, Chanhodaro, Rakigadi, etc., Through this Harappans settlement has been completely traced.

The civilized cities from the Archaeological sources developed social classes, craft and their day to day activities could be identified. Besides long distance trade practiced by Harappan with other countries like Mesopotomia, Central Asia and Some time north of Red sea also established. Most of these civilizations, originally started from hunting and gathering stage which later modified into agriculture though pastoralism has not left completely.

Now, we will turn our attention to the second type of sources i.e.,

02. Literary Sources

Though there is no written records mentioning the existence of Harappan Culture and its people, we have fortunately Veda (which is almost covered with Harappan Period) to get some ideas about Indus cities and its extension.

Keeping Vedas as the main source, many Archaeologist and Linguistics like S.R. Rao, B.B. Lal, Parpola, I. Mahadevan, Waddel, Langdon, Jho, Shendge, G. Possehl, Kak, Fair - Service (Jr.), Rajaram, N. Sankalia H.D, are constantly working on deciphering Indus Script till date. But no stratified attempt has been made within the 2,60,000 Sq Kms vast area of the Indus civilization.

While many Archaeologist suggest that language in these letters must have Sanskrit, whereas some of them opines it might be proto - Tamil.

So, in the above content the presence of Celt with Indus Script is noteworthy for many reasons. Some time we don't know how much the said letters are proved by Linguist / Archaeologist etc.,

Moreover, the said discovery is purely accidental which needs further Archaeological Investigations in the form of Exploration & Excavation. Then only, we can make any further observation.

It is suggested that before concluding this Neolithic celt legend, we have to conform with other archaeological source material along with this celt, because it's a chance discovery. For example, a chance discovery of Harappan Gold jewelry from the field in Mandi on 1st June 2000 in Mazaffar Nagar U.P., made by that State Archaeology. U.P. & ASI jointly inspected this site and later it was excavated by ASI.

Like that, this recent discovery made by State Archaeology may also through some light on the problems and issues about Indus - South Indian relation if they properly examine it.

A DRAVIDO-HARAPPAN CONNECTION? THE ISSUE OF METHODOLOGY

Dr. Michel Danino

The recent find of a stone axe in Sembiyan-Kandiyur with incised signs bearing resemblance to the Indus script has brought fresh attention to the long-standing debate on a possible relationship between Harappan and Tamil cultures and languages, and in particular on the theory that the Harappan language might have been proto-Dravidian. On closer scrutiny, however, the debate suffers from oversimplification, hasty conflations, and faulty methodology. This paper attempts a critical examination of the underlying – and neglected – issues at stake, and offers a view at variance with the Symposium's stated theme.

Background

Let us recall that the Harappan-Dravidian equation derives largely from a colonial context that created an imagined "Dravidian," autochthonous identity in contradistinction to an imagined "Aryan," alien identity. Just as nineteenth-century Europe became obsessed with the Aryan-Semite pair, an equally mythical Aryan-Dravidian pair was invented in India. While the former's genesis has been painstakingly traced by a number of historians (notably Léon Poliakov,[2] Maurice Olender,[2] Thomas Trautmann[3] and Stefan Arvidsson[4] the latter is still awaiting its full deconstruction.[5]

In the meantime, we must keep in mind that until the advent of European Indology, the words "Dravidian" and "Aryan" had, in India, purely geographical connotations, and, in the latter's case, a cultural one. Racial and linguistic meanings for those two words had been completely alien to Indian literatures and traditions until Max Müller and Bishop Caldwell decided to substitute them for the traditional ones. This shift in meaning was to lay the foundation of Indology, a foundation uncritically accepted by most Indian scholars, with a few brilliant exceptions [6] Unfortunately, those four subtexts of "Dravidian" and "Aryan" –

traditional, cultural, racial and linguistic — are more often than not jumbled together, landing many scholars into confusion. Ethnological identity (not "race," which is a completely unscientific notion rejected by biologists), language and culture are three wholly distinct concepts, which sometimes overlap and sometimes not.

As an example of this confusion, the valid linguistic concept of a Dravidian family of languages (which should have properly been named "South Indian family") got conflated with a racial notion and gave rise to the grand vision of a "Dravidian Long March" from Northwest to South India. Imaginary arrows were drawn connecting the dots left on the ground by pockets of Dravidian speakers, as in this map of R. S. Sharma [7] (Fig. 1).

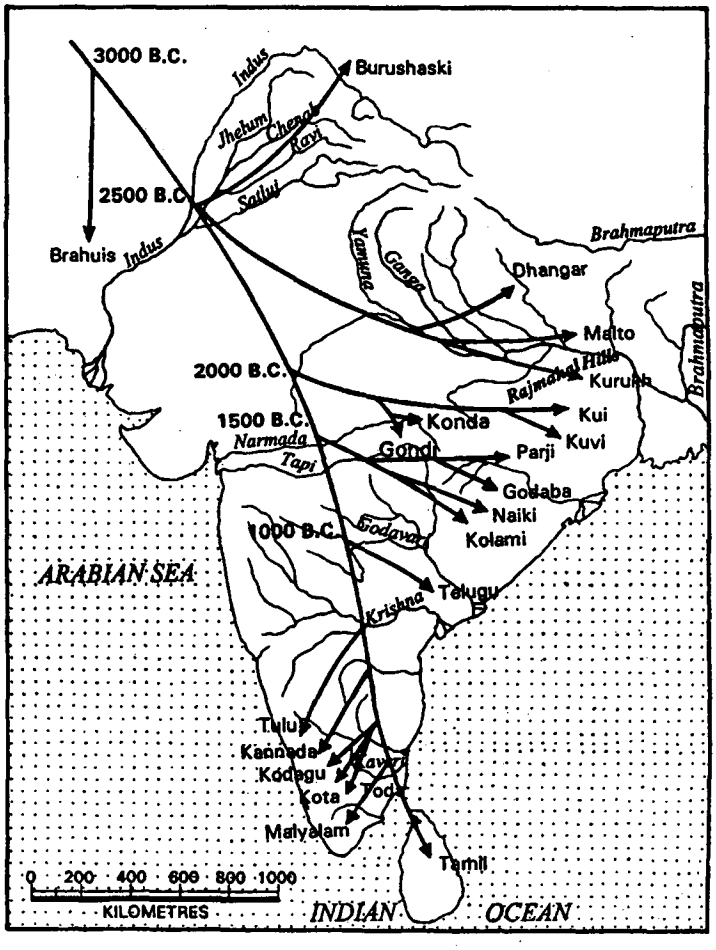

Fig. 1: A map of imagined Dravidian migrations (from R. S. Sharma)

In his caption, Sharma misleadingly uses the word "historical" to describe actually nonexistent "settlements." I will later point to the archaeological impossibility of such a map, leave alone the arbitrariness of the neat chronology it assumes, with completely asymmetrical branchings off (all eastward at first, then all westward), major stages every 500 years with clockwork precision, and finally a very late arrival (500 BCE or later) in the Tamil region.

The discovery of the Harappan or Indus-Sarasvati civilization in the 1920s completed this mythical picture; on flimsy cultural considerations, some scholars assumed its authors to have been so-called Dravidians, which allowed them to turn the so-called Aryans into destroyers of this brilliant civilization, giving the surviving Dravidians a convenient pretext to migrate southward.

The Sembiyan-Kandiyur celt

The Sembiyan-Kandiyur celt has been interpreted as "showing a link between Indus script and Tamil culture."[8] This formulation at once introduces a confusion between language and culture, ignoring the fact that a script and indeed a language can be a vehicle for different cultures; the Chinese script, for example, was the vehicle of Confucianism as well as Buddhism. The real questions are whether the celt does bear Indus signs, and if it does, how those signs are related to Tamil language and culture.

Before I examine those questions, I must raise a few methodological issues. First, there have been well-known instances of faked inscriptions in Tamil Nadu and elsewhere; it is therefore essential to have a microscopic examination by expert mineralogists so as to determine whether the inscription was made before or after the stone was polished, and if after, approximately how long after.

The second point concerns the lack of an archaeological context for the find; yet a fairly precise date "between 2000 B.C. and 1500 B.C." was proposed by I. Mahadevan,[9] a well-known expert on the Indus script who was consulted on the celt. We must keep in mind that in the South, Neolithic artefacts have frequently been found in later Megalithic sites, sometimes even as surface finds. Therefore there can be no justification for the proposed date, except that it fits nicely with an imagined exodus from the North-West after the collapse of Harappan urbanism. For all we know, the celt could have been polished at any time between 2500 and 500 BCE. As regards the inscription's date, in the absence of expert scrutiny, it is anyone's guess.

However, the most serious methodological flaw concerns the nature of the language of the inscription. Assuming that a few signs were incised on the celt, they appear rather indistinct. (In fact, I. Mahadevan initially reported three signs, later four.) Their identity as Indus signs is by no means established. Moreover, Indus-like graffiti have long been noticed in the South on pottery and rock art, [10] and have been often brandished as proof of the presence of Indus script there. [11] And yet, a few Indus-like signs prove strictly nothing. Let us remember that the Indus script has been compared to the scripts of several other civilizations, for instance proto-Elamite (Fig. 2), Old Semitic (Fig. 3), the script of Easter Island (Fig. 4) and the Etruscan script, to name just a few.

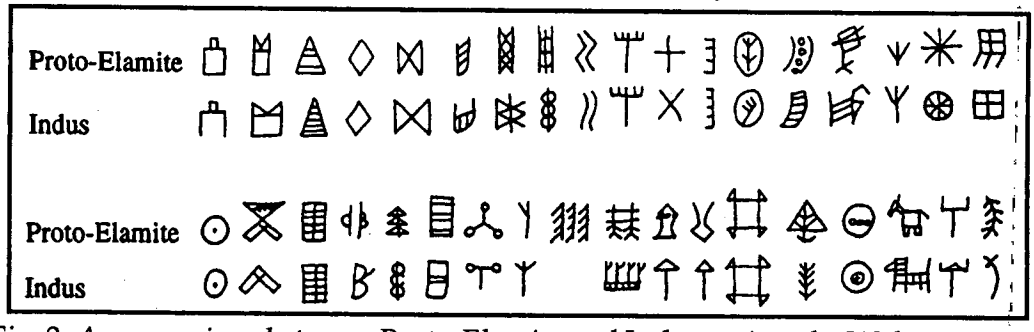

Fig. 2: A comparison between Proto-Elamite and Indus scripts, by Walter Fairservis[12]

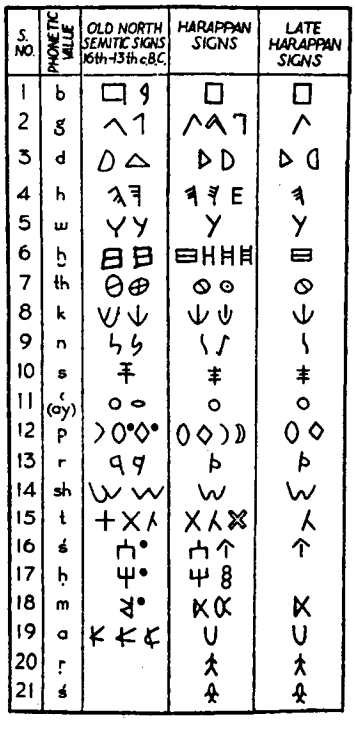

Fig. 3: A comparison between Old Semitic and Indus scripts, by S. R. Rao[13]

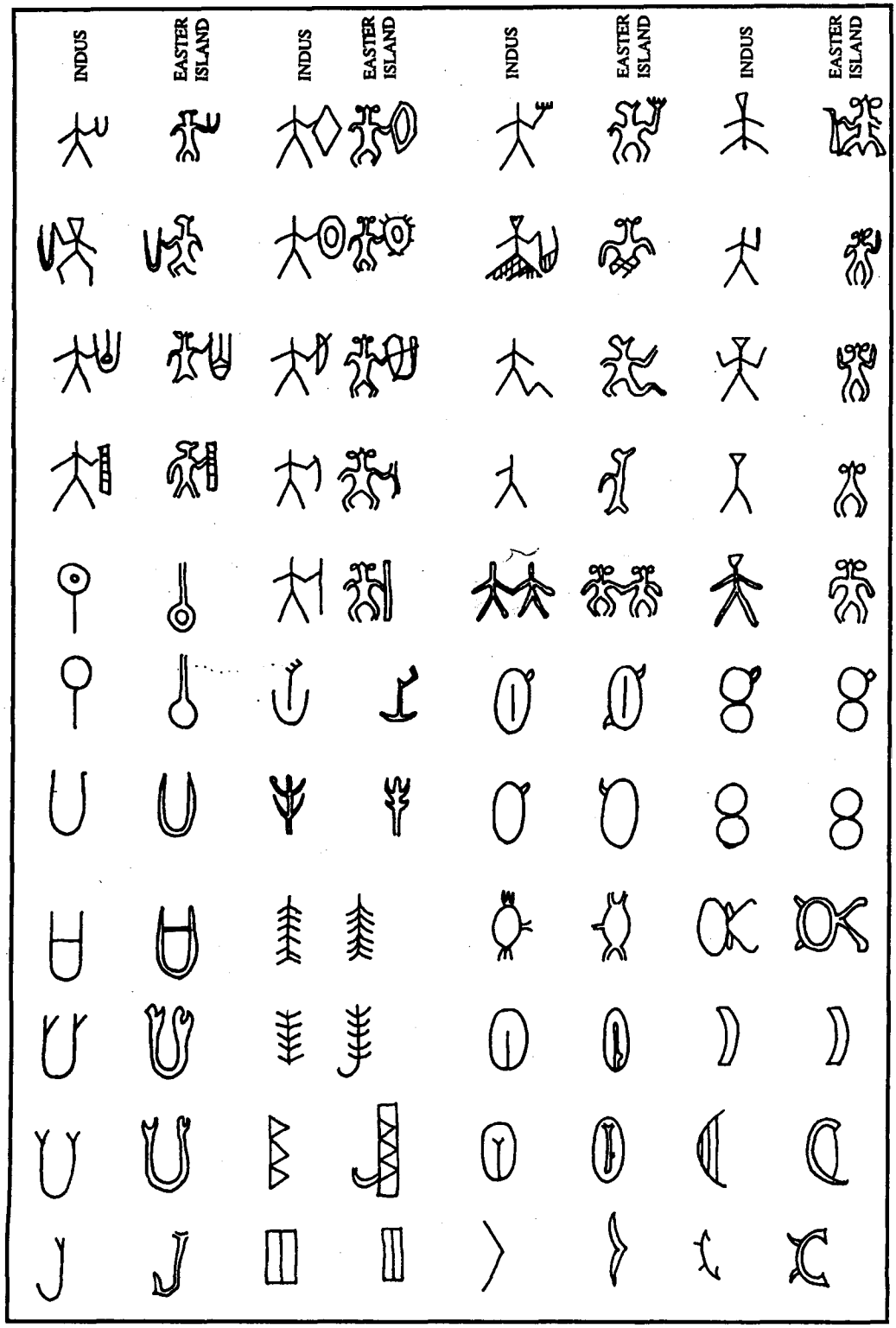

Fig. 4: A comparison between Easter Island and Indus scripts, by de Hevesy[14]

A close look at the tables reproduced in these three figures will be enough to bring out the pitfall of similar shapes: in themselves, they prove nothing whatsoever. Only if we find in the South a clear sequence of several characters of Indus signs that exactly parallel a known Indus inscription can we legitimately claim to have an occurrence of Indus script.

We are far from this, and the Sembiyan-Kandiyur celt hardly helps us, as I. Mahadevan paralleled only the first two signs with a known Harappan sequence. And in any case, the reading remains subjective – "very far from certain" in the words of Asko Parpola, another expert on the Indus script and himself a proponent of a Dravidian decipherment.[15] There is nothing in the Sembiyan-Kandiyur axe that essentially differs from the numerous graffiti found in the South on pottery with some Indus-like signs, but without clear Indus sequences.

The Harappan-Dravidian linguistic equation

We must now look at some of the broader issues involved.

Let us assume, for the sake of argument, that the celt does bear four Harappan signs. The inference that the Harappan language would then be Dravidian may appear natural at first sight, but is faulty on the following two grounds:

First, we know of sustained Harappan contacts as far away as Dilmun, Mesopotamia or Margiana; exchanges with a few parts of South India are quite likely and have long been suggested, perhaps for semiprecious stones. This could explain a few instances of Harappan script in the South. But Indus seals found in Mesopotamia do not allow us to conclude that the Mesopotamians were the creators of the script or that the Harappan language was "Mesopotamian" – in other words, *a few occurrences of the script tell us nothing about its authorship or its relationship with the region where it is found.*

Secondly, if some early South Indian communities did adopt a Harappan-like script, they would have used it to write their *own* language, not the Harappan language – *script and language are distinct issues*. Brahmi, for instance, was used to write several distinct languages. So even if one day we do find unambiguous Harappan script in the South and its language turns out to be Tamil, it will still tell us nothing about the language of the Indus-Sarasvati civilization. This crucial point is generally overlooked.

Many of the proponents of the Dravido-Harappan equation resort to various kinds of "linguistic evidence" to establish that the Harappan language was Dravidian. Yet, contrary to a widespread notion, the linguistic evidence actually runs against a significant Dravidian presence in the North-West. I will present the main points briefly.

One piece of "linguistic evidence" is that numerous Dravidian words are found in the Rig-Veda, pointing to a Dravidian "substratum." The fact is that there is no consensus among linguists on this point. The Rig-Veda has 500 Dravidian loanwords according to T. Burrow; the figure comes down to 380 according to F. Kuiper, to 100 according to M. Witzel, and to just one according to M. Emeneau. Then, the substratum language is proto-Dravidian according to Burrow or Southworth, but para-Munda according to Witzel, who tried to show that Dravidian loanwords in the Rig-Veda are found only in the more recent Mandalas and are therefore irrelevant.[16] Other linguists reject all proposed Dravidian loanwords: this is the case with P. Thieme and H. H. Hock.[17] Murray B. Emeneau, the late Dravidian linguist, hoped that linguists could agree on at least *one* loanword, *mayura*, as being Dravidian; he wrote: "[Vocabulary loans from Dravidian into Indo-Aryan] are in fact all merely 'suggestions.' Unfortunately, all areal etymologies are in the last analysis unprovable, are 'acts of faith'...."[18] Clearly, the "Dravidian substratum" in Vedic Sanskrit is an elusive one.

There is a subtler point here: assuming there might be a few words with Dravidian roots in the Rig-Veda, how do we know that they were "borrowed" by Aryan immigrants? Loanwords, if any, need not be relics of a "substratum"; in the absence of a well-defined pattern, they could just as well be the result of long-standing exchanges.

Then there is the case of Brahui, a Dravidian language still spoken in parts of Baluchistan, which has often been brandished as the ultimate proof of a Dravidian presence in the Indus region. But in the 1920s, French linguist Jules Bloch demonstrated, through an analysis of the Brahui vocabulary, that the language reached Baluchistan recently, perhaps at the time of the Islamic invasions and probably from central India.[19] This thesis was more recently endorsed by Murray Emeneau,[20] and still more recently by H. H. Hock.[21] Finally, the linguist and mathematician Josef Elfenbein confirmed it using a different approach.[22]

According to the French Indo-Europeanist Bernard Sergent, "the conclusion is radical ... Brahui reached Baluchistan late, and can therefore no longer provide proof or even a clue of the Dravidian-speaking character of the people who lived along the Indus."[23] Clearly, the Brahui trump card has failed, although a number of our Indian scholars remain unaware of the above linguistic studies.

On the other hand, one linguistic argument is nearly fatal to the Dravido-Harappan thesis. It comes from hydronymy: the names of all the 35 river of the North-West of the subcontinent are not Dravidian but Indo-Aryan. It is inconceivable that a Dravidian-speaking population could have lived there before the so-called Aryans – if they had, at least a few river names would betray their Dravidian origin. But there is none. Such a complete erasure of earlier names would be unprecedented: in Europe, many pre-Roman river names have subsisted, just as in America pre-colonial river names remain common. River names are among the most conservative linguistic features, and what the North-West's hydronymy is plainly telling us is that Indo-Aryan has been spoken there for ages.

There are, indeed, traces of Dravidian names in some place names of the coastal areas of Maharashtra and Gujarat; but that is not the Harappan heartland, and until we can safely date this presence of Dravidian speakers, we risk committing the same error as in the case of Brahui.

Finally, it is worth recalling that there have been at least five major attempts to read proto-Dravidian in the Indus inscriptions: those of Father Heras, the Finnish team (under Asko Parpola), the Russian team (under Yuri Knorozov), Walter Fairservis and I. Mahadevan. If the outcome of their work must be summarized in a few words, it is that no two of these scholars agree on a decipherment, or even on the basic "Dravidian" features of the script. Clearly, this is not a very encouraging scenario for the Dravidian thesis, especially when Parpola, Knorozov and Mahadevan worked long and painstakingly with the help of computers.

Seven obstacles to the Dravido-Harappan thesis

In addition to the linguistic evidence, the thesis of a Dravidian authorship of the Indus-Sarasvati civilization meets with seven formidable obstacles. I will spell them out in the briefest possible manner.

1. Arguments based on the presence in the Indus-Sarasvati civilization of elements of so-called "Dravidian culture" (such as a "proto-Shiva") are misleading, since we know nothing of such a culture 5,000 years ago. It is illegitimate to fill a gap of more than two millennia without evidence.

2. The Sangam literature is completely silent on a large-scale migration from the North-West, and of course on a clash with invading Aryans.

3. There is no archaeological evidence of a southward migration through the Deccan after the end of the urban phase of the Indus-Sarasvati civilization. In other words, the "linguistic" maps of Dravidian migrations such as R. S. Sharma's (Fig. 1) find no confirmation on the ground and belong to the realm of imagination. The only actual evidence of movements at that period is of Late Harappans migrating towards the Ganges plains and towards Gujarat.

4. Migration apart, there is a complete absence of Harappan artefacts and features south of the Vindhyas: no Harappan designs on pottery, no Harappan seals, crafts and ornaments, no trace of Harappan urbanism (including fired bricks with precise ratios), no civic organization, no extensive bronze technology, no set of chert weights, etc. Cultural continuity from Harappan to historical times has been increasingly documented in North India, but not in the South.[24] In fact, there is no distinct Chalcolithic phase in the South. This means, in effect, that the south-bound Late Harappans would have reverted from an advanced urban bronze-age culture to a Neolithic one! Their migration to South would thus constitute a double "archaeological miracle": apart from being undetectable on the ground, it implies that the migrants experienced a total break with all their traditions. Such a phenomenon is unheard of.

5. Had Late Harappans migrated to the South, recent advanced studies of biological anthropology would have figured it out. The work of K.A.R. Kennedy,[25] John Lukacs and Brian Hemphill[26] has, on the contrary, established biological continuity in the North-West from 4500 to 800 BCE. In particular, there is no visible disruption in the skeletal record around 1500 BCE, the presumed date of the presumed Aryan invasion, which would coincide with a Dravidian exodus. This means that the Harappans were, on the whole, the ancestors of today's Punjabis, Rajasthanis, Haryanis, Sindhis and

Gujaratis. None of the population movements the colonial theories imagined finds any support on the ground.

6. Added weight to this conclusion has now come from several genetic studies, which have ruled out the influx of so-called Aryans in the 2nd millennium BCE.[27] One recent study,[28] based on 728 samples covering 36 Indian populations, additionally found "overwhelming support for an Indian origin of Dravidian speakers" and concluded: "Our data are also more consistent with a peninsular origin of Dravidian speakers than a source with proximity to the Indus...."

7. Coming to the field of agriculture, British archaeologist and archaeobotanist Dorian Fuller,[29] correlating recent archaeobotanical evidence with Dravidian linguistics, concluded that "Proto-Dravidians [were] somewhere within the core range of modern Dravidians," that is to say, in South India.

Without bringing in other strong circumstantial evidence such as that of the Sarasvati river, we can see that several disciplines — archaeology, anthropology, genetics and tradition — agree on the impossibility of a Late Harappan southward "Long March." (Incidentally, they also rule out the fanciful thesis of a migration in the opposite direction, from the South northward, by "Dravidians" in centuries preceding the mature phase of the Indus-Sarasvati civilization.) Scholars who advocate such theses will do well to tackle the above points rather than indulge in unverifiable parallels based on a few signs.

Conclusion

The theory of a Dravidian authorship of the Indus civilization is as much a relic of colonial scholarship as the Aryan invasion theory. It has survived because it became an integral part of the latter, which in turn was erected as a pillar by a few ideologies.

There was never either an "Aryan race" or a "Dravidian one," as anyone attempting to give such concepts a scientific definition will soon find out.

It is high time we revised our outdated and simplistic models of India's protohistory. They do not work and lead us into a series of paradoxes. Scholars have a sacred duty to study the evidence objectively.

Tamil culture is great in its own right; it does not need to climb on Harappan shoulders to appear greater.

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HYPOTHESIS OF PROTO-DRAVIDIAN PROVENANCE OF INDUS CIVILISATION

P. Ramanathan

The past eight decades of work on the civilisation by the best intellects in the fields of Archaeology, Ancient history, Oriental studies, Linguistics, Anthropology endorse the hypothesis of the proto-Dravidian affiliation of the Indus civilisation. This paper ,shows how this hypothesis has been further validated by recent advances in fields like the studies on the prehistoric spread of **Anatomically Modern Humans** (AMH) i.e. Homo Sapiens Sapiens and on the "Mother Tongue" of man, including Nostratic/Eurasiatic studies. The last section summarises the attempts made till now to decipher the Indus script.

A. Recent developments in Studies on the Relative Chronology of Population of various parts of the World *by Anatomically Modern Humans:* and on the *Mother Tongue of* man, including Nostratic Studies.

1. Generally accepted current scholarship holds that all the 600 Plus Crore Human Beings now existing and belonging to the species AMH originated in Africa about 1,40,000 years ago and that expanding out of Africa it populated the entire world

Siberia	30,000 Years ago
Europe	40,000 Years ago
The Americas	30,000 - 12,000 years ago
Japan	30,000 years ago
New Guinea	32,000 years ago
Australia	50,000 years ago and
Micronesia and Polynesia	4,000 to 1,000 years ago

(Cavalli-Sfora et.al. (1994); *The History and Geography* of *Human Genes* Princeton; New Jersey). Language, as such (i.e. the Mother Tongue of man) is considered by Scientists to have evolved among AMH only about 50,000 years ago. - Carstairs McArthy, Christianson, levin etc. (The earlier species, Homo Erectus. Homo Neadarthelensis etc did not have speech and they have all been exterminated by AM H by 50,000 / 30,000 years ago respectively). South India is

likely to have played a vital role in the migration of AMH out of Africa 50,000 years ago and Flemming (2004) has suggested that submarine prehistoric archaeology of the Indian continental shelf is a potential source for proving this.

2. Even in the 19th Century eminent philologists like Max Muller were not averse to the possibility of all languages having ultimately had a common origin. In the 20th Century. Pederson, Trombetti, Swadesh, Greenberg, Merritt Ruhlen, IllichSvitych, Dolgopolsky, Shevoroshkin, Starostin, Bomhard and Kerns, et. al have made extensive studies justifying the classification of various language families into the following Super-families -- -viz.

1. Nostratic (comprising Indo - European, Dravidian, Uralic, Altaic, Kartvelian and Afro-Asiatic i.e. Hlamito -- Semitic). R.L.Trask *(Historical Linguistics,* 1996) thinks that proto-Nostratic could have been spoken 15,000 - 10,000 years ago and adds that Nostratic represents far away the most plausible of all these proposals and "may win respect in a decade". He wrote this in 1996.

2. Sino-Caucasian; 3. Austric ; 4. Amer-Ind; 5. Indo-Pacific; 6. Khoisan; and 7. Congo-Saharan

3. The Nostratic Macro-family is more or less similar to the eurasiatic macro-family conceived by Joseph H.Greenberg *(Indo-European and its Closest Relatives - The Eurasiatic Language family: Vol. I Grammar and II Lexicon;* Standford University Press, California, 2000) as consisting of Etruscan, IndoEuropean, Uralic-Yucagir, Altaic, Korean-Japanese-Ainu, Gilyak, Chukotian and Eskimo-Aleut. As regards Dravidian, Greenberg thought that it could be a sister of Eurasiatic and not its daughter. (Greenberg's personal communication to Bhadriraju Krishnamurthy in October 2000 at Stanford University - vide the latter's The Dravidian Languages, *2003,* Cambridge University Press, p.46). This means that Dravidian is older than the Indo-European family of languages. Definitely very much older than the languages of sub-families of Indo European like Slav, Iranian, Vedic/Sanskrit, Green Latin, Celtic etc. A concondent voice in regard to the antiquity of the Dravidian languages is that of Colin P.Masica who says apropos the affinities between Dravidian and Australian Aboriginal languages: "It may be a question of a very ancient common substratum in South Asia., pre-Dravidian going back even to the original peopling of the world" *(The Year Book of South Asian Languages and Linguistics, 2001;* New Delhi, Sage Publications).

4. Caldwell published in 1856 his monumental 'A comparative grammar of the Dravidian or South Indian Family of languages'. In the second edition

in 1875, he furnished a wealth of information by way of grammatical comparisons and glossarial affinities between Dravidian on the one hand and Indo - European; Semitic; Elamite (the Achaemenid Elamite of the trilingual Behistun inscription of Darius I); Ural-Altaic; Japanese; and Australian Aboriginal languages on the other, information which strongly supported the pioneering hypothesis that Dravidian was perhaps the pivotal family of languages, capable of shedding light (or what light is possible at this distance of time) on the situation which obtained at the primeval time of the original one-ness of these language families. G.U. Pope had also expressed similar views in 1855 in *his A Handbook of the Tamil language.*

"[Tamulian i.e. Dravidian languages] are probably *disjecta membra* of a language co-eval with Sanskrit and having the same origin with it. They certainly contain many traces of a clear connection with the Greek, the Gothic, the Persian and other languages of the same family in points even where Sanskrit presents no parallel".

The most competent of the scholars who have pursued further the above hypothesis are Gnanaprakasar and G.Devaneyan (Pavanar) who have proposed convincing protoDravidian roots for a number of basic terms in Indo-European languages.

5. Burrow, Emeneau et.al. have already identified a few scores of Dravidian words in the earliest Indo-Aryan (Rg Veda included) vocabulary. This is summarized by Zvelebil *(Dravidian Linguistics-an introduction, 1990)* who further lists about ten linguistic traits many adopted by Indo-Aryan from Dravidianas early as from Rg Veda. It should be noted that the conclusions of Gnanaprakasar and Pavanar go far beyond this limited angle of influence of Dravidian on Vedic /Sanskrit. Those two consider that many basic roots in Indo-European are correctly to be traced to proto Dravidian and that the hypothesized proto Indo-European roots lack conviction. S.H.Levitt has in his "Some more possible relationships between Indo-European and Dravidian" *(Journal of Indo-European Studies, 2000)* endorsed as reasonable and very perceptive, hundreds of connections between proto - Tamil and Indo-European hypothesized by Devaneyan., Further Greenberg (2000) has presented 72 items of grammatical evidence for the validity of Eurasiatic as a linguistic stock. There is congruent Dravidian data for more than 20 of the said 72 items. The data supports the Gnanaprakasar - Devaneyan model which envisages. Indo Euroepan speakers branching off from proto-Dravidian speakers earlier than 10,000 BC; living for some millennia in Central Asian steppes; certain groups of Indo-European speakers migrating west wards to Europe during

4,000-3,000 BC (giving rise later to Greek, Latin, Celtic, Germanic and Slavic language families); -and certain other groups migrating East and South-Eastwards by 2,500 *B.C.* giving rise to Indo-Aryan and Iranic language families, both groups absorbing from Dravidian speakers in North West India and beyond, a second dose of Dravidian features, (in addition to the original Dravidian heritage they took with them circa 10,000 B.C.)

B. Direction of movement of Proto Dravidian speakers circa 10,000 Yrs BP should have been from South to North: Tamils Autochthons

The ruling dogma is that the proto-Dravidian homeland was in NorthEastern Iran, from where they marched circa 3000 B.C. into India, South India and Ceylon, "dropping off' groups along the way, rather like a bus depositing passengers. (K.V.Zvelebil (1972); The descent of the Dravidians"; IJDL 2; pp. 57-63. K.A.Nilakanta *Sastri also (A History of South India,* IV Edn. 1976) considers that this premise seems "not unlikely". The alternative, and now less fashionable model of Northward ascent of Dravidian speakers was supported by H.R.Hall, Father Heras, P.T. Srinivasa Iyengar, V.R.R. Dikshitar, Maraimalai Adigal, U.R.Ehrenfels, X.S.Thaninayagam, G.Devaneyan, Bridget and Raymond All chin and K.K.Pillai.

6. The Zvelebil model of descent of Dravidian speakers into India circa 3000 B.C. does not fit the Linguistic facts. This flawed model has been unthinkingly adopted by scholars working in the field of prehistoric relationship between MacroLanguage families. For example Renfrew hypothesized in 1997 (Blench, R. and M.Spriggs: *Archaeology and Language: (1) Theoretical and Methodologies Orientations)* as follows:

"(The dispersal of farming populations from the Near East) would place the respective homelands of the protoIndo-European, Proto-Afro-Asiatic, Proto-Elamo-Dravidian and proto-Altaic languages within the relatively circumscribed Near -Eastern heartland. If these languages are indeed related, then the Archaeological arguments would place proto-Nostratic as a language spoken in this area, presumably a few millennia prior to the dispersal phase around 8,000 to 6,000 B.C"

It is the evidence of the remarkable affinity between Dravidian and Australian aboriginal languages which is fatal to the above model of Near-Easten Provenance of proto- Nostratic speakers 10,000 years ago and to the corollary of that model "Dravidian descent into India circa 3,000 B.C. **The Australian aboriginals remain cut off from the rest of mankind for the past 8,000 years and more; and yet there are remarkable glossarial, grammatical and phonetic**

affinities even now between Tamil on the one hand and those languages on the other hand. Arguing from this fact, among others, P.Ramanathan has in his "Direction of movement of Dravidian Speakers in prehistoric times *(Dravidian Studies, of* Dravidian University, Kuppam; 1-3 April-June 2003) urged that the model of "Dravidian descent into India circa 3,000 BC from the Middle-East should be replaced by that *of* Dravidian Ascent from South India in the prehistoric past, earlier than 10,000 years ago.

7. Only the model of Dravidian Ascent (together with the facts about the pivotal place of the Dravidian language group in the evolution of the major Macrofamilies of languages like the IndoEuropean, Ural-Altaic, Australian Aboriginal languages etc.) can illuminate most of the issues concerned with the Indus Valley civilisation - like.

i. the ethno-cultural identity of that civilisation;

ii. relationships with other ancient civilisations of the Middle East;

iii. the most probable identity of the language family to which the script of its inscriptions might belong; and

iv. The challenge faced by it after about 1700 B.C.; and how surviving (and/or benefiting from) that challenge it metamorphosed to become, and remain till now, the warp and woof of all basic aspects of what is now called the "Composite Indian culture" - those aspects being society, culture, and the "Hindu" religion, ethos, language, and art.

C. Ethno-Cultural identity of Indus Civilisation; and its remarkable Heritage surviving in Indian Culture and Society

8. After the results of the Indus Valley excavations became known after 1931, there has been a lively debate on whether that civilisation was non-Aryan or Aryan. Since many of the protagonists of the later view hypothesise that there was no intrusion into India of Indo-Aryan speakers after 1500 B.C. (the generally accepted date for the said intrusion) they now adopt the terminology "Non-Vedic or Vedic"

9. Who were the speakers of the Indo-Aryan Vedic language? As per established and generally accepted scholarship, they entered India circa 1500 B.C.? (Some posit an earlier date : 1700 B.C. Historical scholarship and comparative linguistic studies hold that the **Indo-Aryan speakers** (hereafter "Indo-Aryans") were the eastern most wing of the once cohesive Indo-European speaking tribes, the Indo Aryan speakers left the pasture land somewhere between the Caspian and Black sea around 2000 B.C. Indo-Aryans together with Indo-Iranians seem to

have lived for some time in Iran and then about 1700 B.C. the Indo-Aryans entered India. The final redaction of Rg Veda, the earliest of the Vedas is dated 1000 B.C. though the collections of the hymns comprising the Veda are likely to have come into being by 1300 B.C.

10. The Indo-Aryan speaking intruders had entered the Indus valley only in small numbers when compared to the natives, but yet they seem to have had some role in the demise of the urban phase of the Indus civilisation in the few centuries commencing from 1700 B.C. Wheeler (1968) considered that their role was significant. Rg Veda contains numerous references glorifying Indra (the Dasyo hantha = Dasyo killer) for killing and destroying non Aryan Dasas, Asuras, Rakshasas and Pisachas. See Shendge (1977 and 1990) and Kuruvikkarambai Velu (1992 and 2001).

Among the non-Aryan chiefs killed by Indra, are Sambara, Varcin, Pipru, Sushna, Namuci, Varasikha etc. Varasikha is said to have ruled Hariyupiya (identified with Harappa by B.B.Roy in 1928 *(JBOR.5);* "Favouring Abhyavartin, the son of Chayamana, Indra destroyed the race of Varasikha, killing the descendants of Brichivat, who were stationed on the Hariyupia, on the eastern part, while the western (troop) was scattered through fear" (RV.6.27.5) P.L.Samy (Jan 1994) feels, that "Arayam" mentioned in *Purananuru, 202* on Irunkovel is the same as Hariyupia (araiyam =: pipal tree; araiyam, araiya + akappa - araiyakappa - Harappa). Puram 201 mentions that 49 generations earlier (i.e. in ancient times) the ancestors of Irunkovel were ruling a city with a magnificient fortress, called Tuvarai. Nachinarkkiniyar's commentary on *Tholkappiam : Payiram* mentions that Velir came from Tuvarapati (Dwaraka). Puram Stanzas 201 and 202 perhaps conflate references to Harappa (if Araiyam does refer to Harappa) and Dwaraka. Two Indus seals portray an archaic and characteristically Indian form of a hero strangling a tiger with each hand, similar to the Gilgamesh portraits of Sumerian civilisation. Irunkovel is called "pulikatimal" in *Puram.* Has the epithet any connection with Indus Valley seals?

11. The violent impact of the intruding Aryans was formerly mentioned as the sole cause of the decline and disappearance of the urban phase of the Indus Valley civillsation. Allchin (1995) seems to express the current consensus view in the following terms viz.

> "Any or all of these postulated (four) causes may have operated during the later stage of the Indus civilisation either singly or in combination and contributed to bring it to an end"

One set of causes : Natural (decline of rainfall etc)

Second : calamitous natural events (tectonic shifts; drying up of Ghaggar (Sarasvathi river)

Third : Human intervention (Intruding Aryans, tribesmen; break-down of trade contacts;

Fourth : Epidemics.

The decline and disappearance of the urban milieu of the Indus Valley culture during the period 1700 - 1500 B.C. did not mean that the culture itself vanished. Entrenched in the vast rural population that culture survived intact and came to form 75% (12 annas in the Rupee, as Suniti Kumar Chatteiji used -to say) of the later Indian Cultural and sociological tableaux. Thus, Walter Fairservis in his Roots *Of Ancient India* (1971)

"The Harappan civilisation did not fall. It stood simply at the beginning of the mainstream of Indian culture and faded into that current, having brought to it acts of faith, class morality, aspects of technology and perhaps a cosmology which heralded the eventual supreme achievement that was medieval India".

D. Deciphering The Indus Script

The first major decipherment attempt on the Indus script was made by G.R. Hunter in 1934. He found that the language of the script could not be indo-Aryan, but could only be a language like Dravidian with mostly monosyllabic words. In his "Studies on *proto - Indo Mediterranean culture*" (1953) Father Heras marshalled a wide range of facts to prove the Dravidian provenance of the Harappan culture as well as the language of the Indus script. Most later decipherers (including Parpola) have drawn inspiration from Heras work including his idea of homophones (on the Rebus principle) worked out on the premise that the language is proto-Dravidian. Heras was correct in holding that the language was Dravidian, but his actual readings are odd and unacceptable, mainly because he read the signs as entirely logographic (one sign = one word). Later decipherers like Parapola sound more convincing because they adopt the logo - syllabic principle.

12. In the light of the proto - Dravidian provenance of the Indus civilisation set out decipherments of the Indus script from the Dravidian angle are alone likely to succeed. Kamil Zvelebil (1990) sets out the solid reasons for the following conclusion:

"Although it is a priori possible that the Harappan language belonged to an unknown family which had disappeared with out leaving

any trace, the most probable candidate is and remains some form of Dravidian" (emphasis supplied).

Asko Parpola asserts in *Frontline* (Chennai) Nov. 24, 2000 (pp 124-125):

In my (1994) book, I have presented numerous facts suggesting that Harappans mainly spoke a Dravidian language. Reviewing Parpola's book in *Antiquity* (June 1995: pp 393 - 395) Michael D.Coe endorsed the universal consensus that Dravidian is still the most plausible hypothesis".

Macrohistories make averments like the following, only on the basis of decades of sound scholarship

"We assume frorn Various shreds of evidence that they were proto-Dravidian, possibly using a language that was a grandfather of modern Tamil" Stanley Wolpert *(An Introduction to India;* Vty of California Press, 1991)

"It now seems atleast likely that they are part of a language akin to the Dravidian tongues still used in southern India, J.M. Roberts *(History of The World;* Pelican, 1992).

13. All decipherers (no matter whether they have read it as Dravidian, or Vedic or some other language) are entitled to our respect as they have often devoted years (sometimes decades) of arduous work. Some specimens of decipherments as Dravidian (by Father Heras, Asko Parpola, Walter Fairservis, C.A. Winters, Poorna Chandra Jeeva, Dr. R. Madhivanan and B.Z. Szalek) are given in Annexure. Heras (1953) was of the view that Sumerian writing itself should have evolved from the Indus writing system. Sadly none of even the Dravidian decipherments are acceptable on the basis of rigorous scholarship and Mahadevan, the doyen of Indus Script scholars has explained this lucidly at the Indian History Congress at Bhopal in 2001. But this does not contradict the broad conclusion that the Indus script when ultimately deciphered is most likely to be proto-Dravidian. Robinson (2001) suggests that further efforts in decipherment be made as a collaborative effort among scholars with deep knowledge of ancient writing systems, Indus Valley and Indian Archaeology, South Asian civilisation ancient and modern, and the relevant languages.

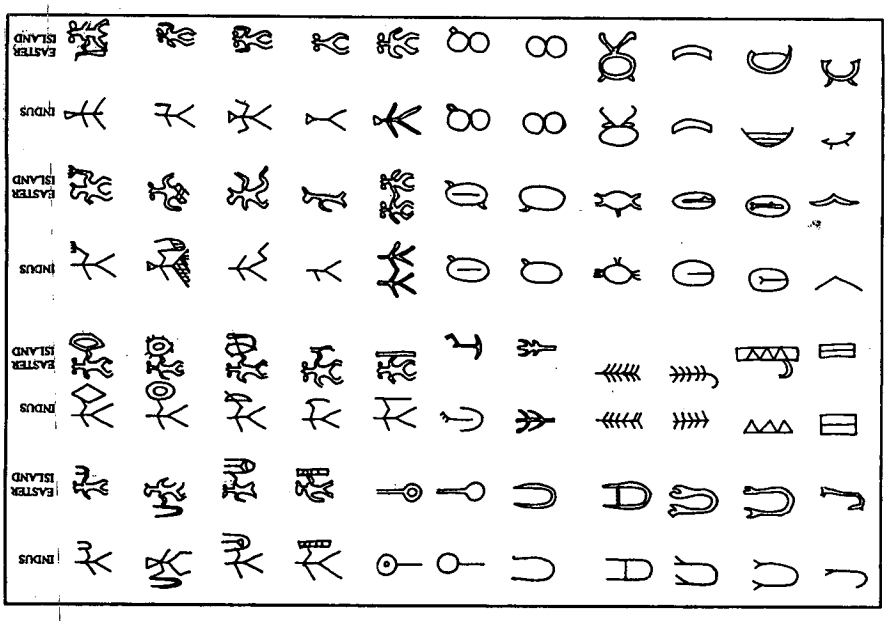
14. The discovery in February 2006 of a Neolithic polished stone celt at Sembian Kandiyur near Mayiladudurai has been hailed us the "discovery of a century" by 1. Mahadevan. His note on the find in IJDL June 2006 highlights the importance of this discovery in the following terms.

"However, the latest discovery of an Indus Text with four signs engraved on a Neolithic polished stone celt (ca. 2000-1000 BCE) from Tamil Nadu is a revolutionary advance with far-reaching implications. Unlike the megalithic graffiti, the text on the Neolithic tool is in the classical Indus script characters. The first and the second signs (s. 48 and s. 342), viz. *muruku* and the 'jar' (to be read as - an) also form a well-known and very frequent combination on the Indus seals and sealings especially from Harappa. the third and fourth signs also occur in the Indus script (s. 367 and s. 301), but their value not yet known."

"We can therefore conclude that the Harappans and the Neolithic people of Tamil country spoke the same language, viz. Dravidian."

"It is recorded that the Neolithic people of South India were in contact with the Late Harappan or post - Harappan people of the Deccan. It is known that gold for the ornaments found at Monhenjodaro came from the Kolar gold fields in Karnataka. Finally, reference can be made to the traditional accounts in old Tamil literature tracing the origin of the Velir chieftains to migration from the Saurashtra region of Gujarat, which was at that time part of the Harappan civilization."

Indus Valley Civilisation and its proto Dravidian / Proto Tamil roots thus constitutes a topic of universal interest, covering a number of disciplines related to the history of mankind.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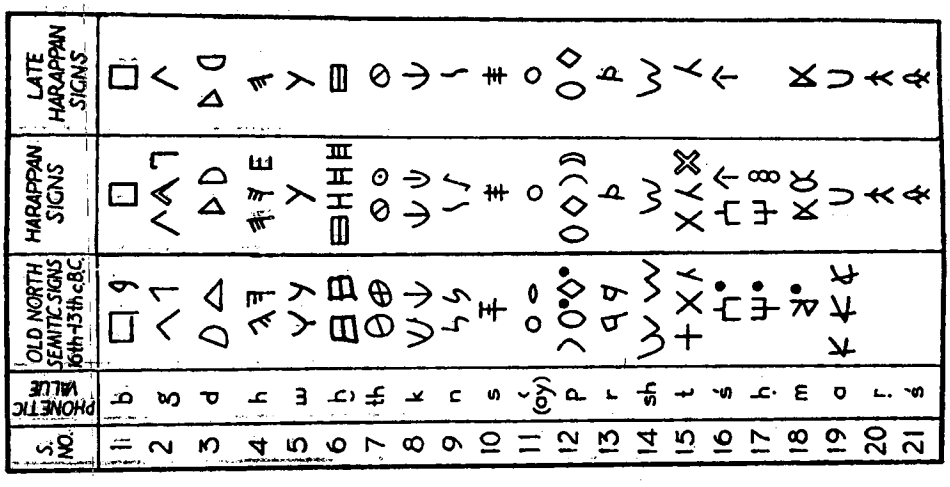
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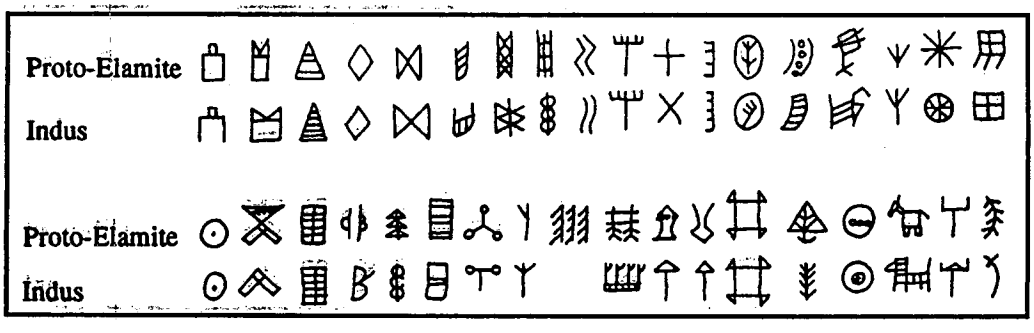
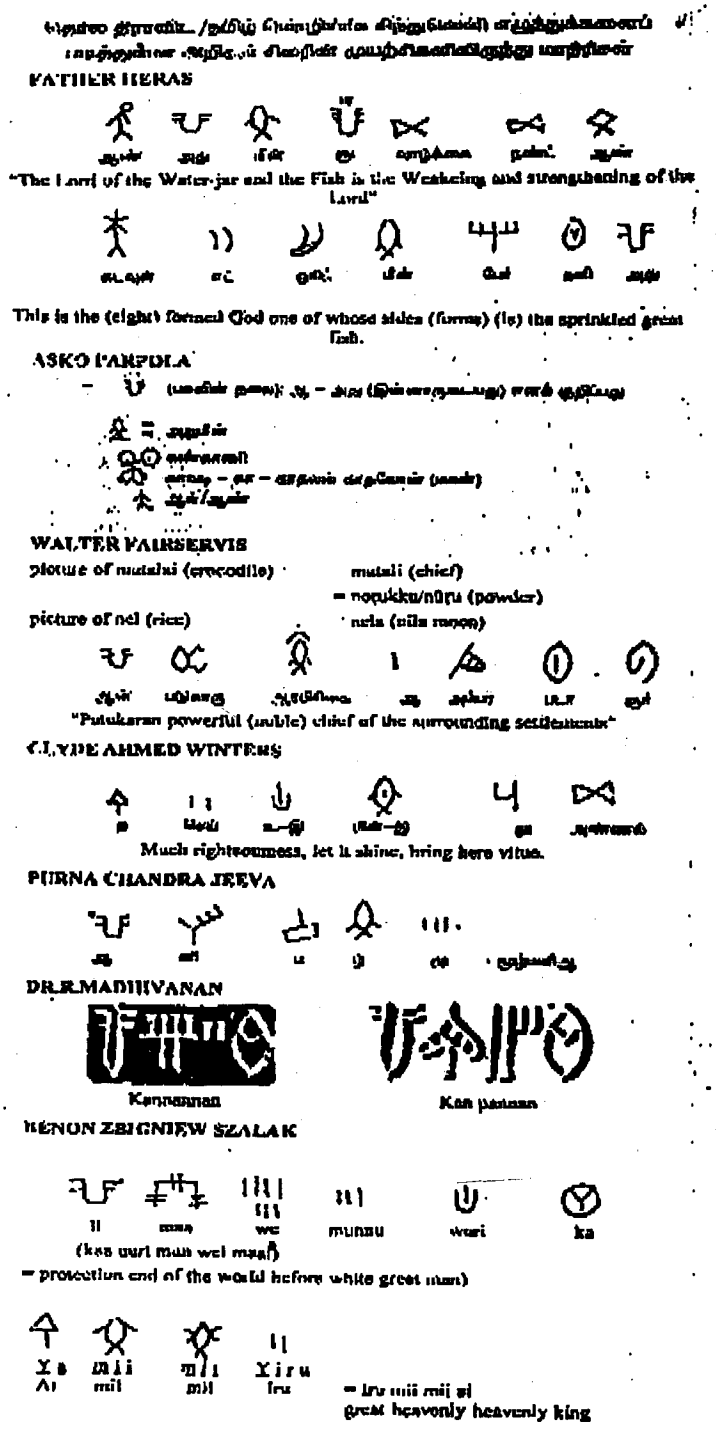

Proto-Elamite
Indus
Proto-Elamite
Indus

The picture of field or dominion has been given the field phonetic value ksh/ksha from kshatra. The word kshatra in the Rigveda convey the sense of dominion, supremacy, power, might (whether human or super human). It also stands for 'Government or Governing body' espeacially in its plural form. It also stands for a tutelary deity., originally the field sign must have been used as a determinative for dominion in Indus writing.


FATHER HERAS

"The Lord of the Water-jar and the Fish is the Weakening and strengthening of the Lord"

This is the (eight) formed God one of whose sides (forms) (is) the sprinkled great fish.

ASKO PARPOLA

WALTER FAIRSERVIS

picture of mutalai (crocodile) mutali (chief)

= noṭukku/nūṟu (powder)

picture of nel (rice) nela (nila moon)

"Putukaran powerful (noble) chief of the surrounding settlements"

CLYDE AHMED WINTERS

Much righteousness, let it shine, bring here vitue.

PURNA CHANDRA JEEVA

DR.R.MADHIVANAN

Kannannan Kan pannan

BENON ZBIGNIEW SZALAK

li maa we munnu wori ka

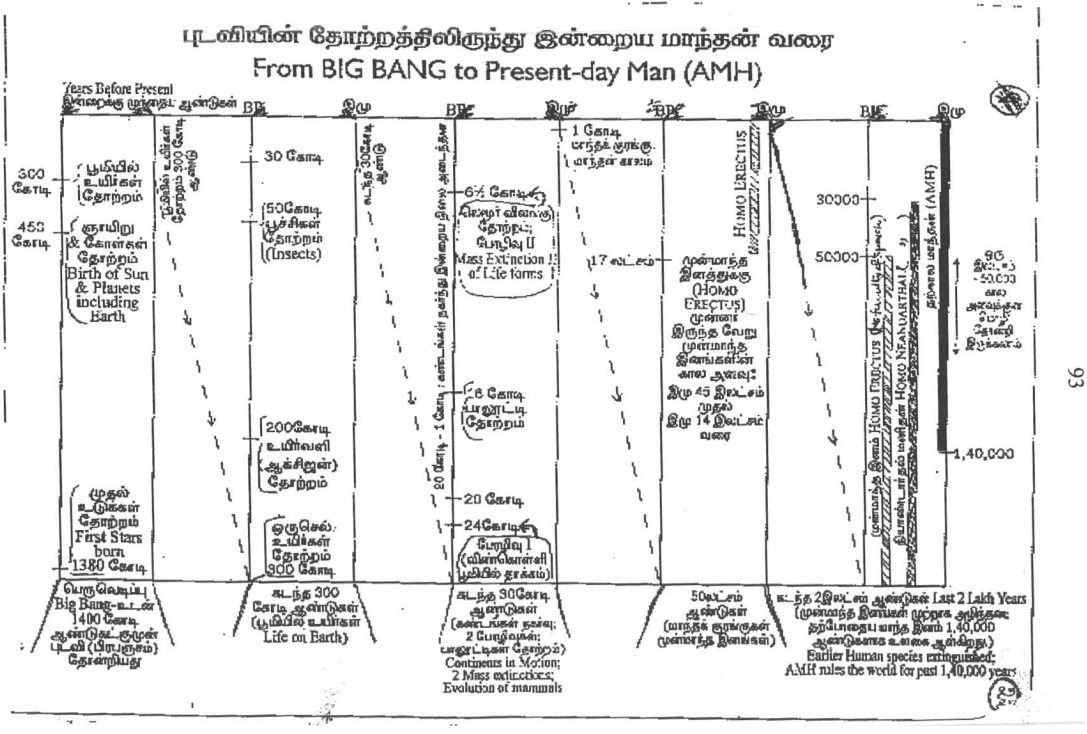
(kaa uuri man wei maal)

= protection end of the world before white great man)

Xa mii mii Xiru

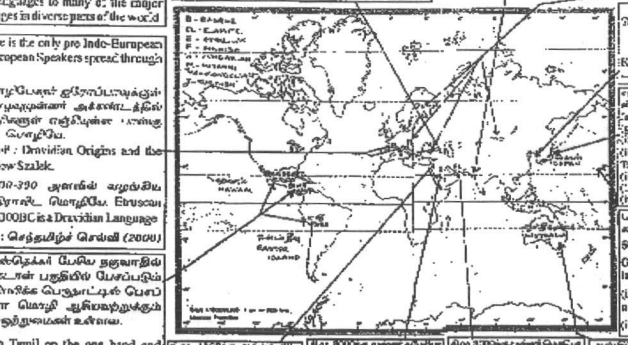
Ai mil mil iru = iru mii mii ai

great heavenly heavenly king


புடவியின் தோற்றத்திலிருந்து இன்றைய மாந்தன் வரை
From BIG BANG to Present-day Man (AMH)
Years Before Present
இன்றைக்கு முந்தை ஆண்டுகள்
BYp
Dip
300 கோடி.
450 கோடி.
பூமியில் உயிர்கள் தோற்றம்
ஞாயிறு & கோள்கள் தோற்றம் Birth of Sun & Planets including Earth
முதல் உடுக்கள் தோற்றம் First Stars born 1380 கோடி.
பெருவெடிப்பு Big Bang-உடன் 1400 கோடி ஆண்டுகட்கு முன் புடவி (பிரபஞ்சம்) தோன்றியது
பூமியில் உயிர்கள் தோற்றம் 300 கோடி ஆண்டு
30 கோடி.
50கோடி. பூச்சிகள் தோற்றம் (Insects)
200கோடி. உயிர்வளி ஆக்சிஜன்) தோற்றம்
ஒருகல் உயிர்கள் தோற்றம் 900 கோடி.
கடந்த 300 கோடி ஆண்டுகள் (பூமியில் உயிர்கள் Life on Earth)
கடந்த 300கோடி ஆண்டு
20 கோடி. - 1 கோடி : கண்டங்கள் தனித்து இன்றைய நிலை அடைந்தன
6½ கோடி ஆண்டு
பெரும் விலங்கு தோற்றம்; போடுவு II Mass Extinction of Life forms
18 கோடி. பாலூட்டி தோற்றம்
20 கோடி.
24கோடி.
போடுவு I (விண்கொள்ளி பூமியில் தாக்கம்)
கடந்த 30கோடி. ஆண்டுகள் (கண்டங்கள் நகர்வு; 2 போழ்வுகள்; பாலூட்டிகள் தோற்றம்) Continents in Motion; 2 Mass extinctions; Evolution of mammals
1 கோடி. மாந்தக் குரங்கு. மாந்தன் காலம்
HOMO ERECTUS
17 லட்சம்
முன்னாந்த இனத்துக்கு (HOMO ERECTUS) முன்னை இருந்த வேறு முன்னாந்த இனங்களின் கால அளவு: இடை 45 இலட்சம் முதல் இடை 14 இலட்சம் வரை
50லட்சம் ஆண்டுகள் (முன்னாந்த இனங்கள்)
30000
50000
95 இலட்சம் - 50000 வரை அப்துன்ன பல்வேறு மாந்தர் இனங்கள் வாழ்ந்து வந்தன
HOMO ERECTUS (முன்னாந்த இனம்)
HOMO NEANDARTHALE
HOMO SAPIENS SAPIENS
தற்கால மாந்தன் (AMH)
1,40,000
கடந்த 2இலட்சம் ஆண்டுகள் Last 2 Lakh Years (முன்னாந்த இனங்கள் முழுக அழிந்தன; தற்போதைய மாந்த இனம் 1,40,000 ஆண்டுகளாக உலகை ஆள்கிறது.) Earlier Human species extinguished; AMH rules the world for past 1,40,000 years

நூல முதன்மொழி - தமிழ்

TAMIL - NEAREST TO MOTHER TONGUE OF MAN



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ASSESSMENT OF NEOLITHIC AND CHALCOLITHIC CULTURES OF KARNATAKA IN THE LIGHT OF RECENT DISCOVERIES

— C. S. Vasudevan

The Molakalmuru taluk of Chitradurga district is rich in archaeological vestiges and has been attracting the attention of scholars for over a century. The taluk, geographically, appears like an elongated neck of a camel. It is surrounded by Rayadurga (of Anantapur district, Andhra Pradesh), Kudligi, Sandur, Bellary and Challakere taluks on east, west, northwest, north and south respectively[1]. This taluk has a number of rocky granite outcrops[2] like Jatinga gudda (3469') Nunkegudda (3022') Jogappagudda (2936') Santegudda (2596') and Brahmagiri (2347') and these outcrops soar to a considerable height. Apart from the above-mentioned hillocks smaller hillocks like Akkammanagudda, Kaigudda, Marlubandegudda, Vibhutigudda, Viranagudda, Guddadahalligudda, Bhairapuragudda, Bagasamudragudda, Jayantinagaradagudda, Mallappanagudda, Kuralugudda, Konasagaradagudda, etc, are spread out in the taluk. These granite outcrops and hillocks are exploited for mining. The average annual rainfall of this taluk is 500-625 mm and the climate is basically dry. Small streams like Bommanakere, Hanagalluhalla, etc drain to Chinnahagari and Vedavati rivers, which provide the water requirements of the taluk. The smaller streams are seasonal, while Chinnahagari and Vedavati are perennial. This taluk is rich in natural resources like Granite-schist, Sandstone, Jasper, Iron, Manganese and Copper ores[3].

It was in 1892 that B. L. Rice discovered Asokan edicts in Brahmagiri, Siddhapur and Jatingaramesvara and published about 44 inscriptions of this taluk[4]. M.H. Krishna conducted explorations and excavation of Brahmagiri and brought to light four fold cultural sequence in 1940. Later Sir R E M wheeler also conducted excavations in 1947 at the same site and published a detailed report men-

tioning threefold cultural sequence[5]. Since then a host of scholars like A. Sundara[6], R. Sheshashastri[7], Hullur Srinivasa Jois, Ravi Korisettar and W V S. Narasimham have worked in this area and enriched our archaeological knowledge. Jayanna undertook an exploration of this region and brought to light a number of sites of archaeological importance[8].

The intensive exploration carried out in this area, in recent times, has thrown a considerable light on the archaeology of this region. It is curious to note that Paleolithic tools have not been met with in this area. However a good number of Mesolithic tool assemblages are noticed. The adjoining areas like Kurnool and Bellary districts have yielded stone implements while it is conspicuously absent in the Molakalmuru region. Besides Neolithic phase, Megalithic phase and its associated materials are also noticed[9]. An attempt is made in this paper to highlight the Neolithic finds of this region.

The Neolithic phase in the human cultural evolution revolutionized the life of ancient man. In India, this cultural phase dates back to at least 8000 BC. Depending upon the characteristic features of the cultural assemblage this cultural phase in India has been classified into 6 major groups[10]. After the first discovery of the Neolithic vestiges in 1860, in India explorations and excavations of the Neolithic sites have thrown valuable light on this culture. In Karnataka, Fraser discovered the Neolithic remains at Koppal in Bellary district (now in Koppal district) in 1872 and followed by R.B. Foote, who reported a large number of Neolithic sites[11] between 1881-86 at Srinivasapur Biramangala (Kolar dt), Lakshmyapura, T Narasipur and Hemmige (both in Mysore District). Banahalli, Hemmige[12], T Narasipur[13], Hallur[14] are some of the sites that were subjected to excavations at a later stage and they have added a lot of information about this culture hitherto unknown to us. R. E. M. Wheeler excavated Brahmagiri where the earliest occupational layer belonged to Neolithic period followed by Megalithic and Early historic periods[15]. In the northern Karnataka river valleys of Krishna, Bhima, Malaprabha, Ghataprabha, Tungabhadra and Karanja have yielded a few sites of Neolithic culture, which include Alasangi, Ingalagi, Terdal, Budinahal, Tavaregera, Kuditini, Belagatta, and Ramadurga. Chitradurga, Chandravalli, Parasurampura[16] are important Neolithic sites in Chitradurga district. The northern part of Karnataka and its adjoining area of Andhra Pradesh have yielded a good number of sites than the southern part of Karnataka. The excavations at T. Narasipur, Budihal and Watagal have yielded the following dates 1495-1985 BC, 1800-1700 BC and 2706-1500 BC respectively[17].

The objective of this paper is to bring to light the Neolithic potentialities of the region and preliminary in nature. Earlier scholars had primarily concentrated their attention around the Brahmagiri area and only three sites were noticed and reported by them. However the recent explorations conducted has yielded 12 more sites in the region aggregating to 15 sites in the region and paving way for the reassessment of Neolithic culture of this region. With regard to the distribution of these sites, it is curious to observe that most of these sites are located either on the hills/hillocks or at the foothills of the hillocks. The Neolithic implements were generally noticed on the top of the hills while the other remains especially the ash was noticed at the foothills. Besides these potteries of gray colour were collected. The Neolithic implements vary in its sizes and include polished hand axes and adzes made of Dyke[18].

It may be possible to trace the development of Neolithic phase of this region, if proper scientific excavations are conducted at a few sites. The available material evidences suggest that at least two phase of development of this culture may be noticed and they are as follows: 1) Aceramic Neolithic phase and 2) Ceramic Neolithic phase. Based on the material evidences it may not be wrong to suggest the existence of an intermediatory phase between aceramic and ceramic phases. This phase may also be termed as Neolithic-Chalcolithic phase. Typologically the handaxes may be classified into two groups and first being crude, undressed polished stone axes belonging to an early phase, may be aceramic phase and the second being polished stone hand axes belonging to later or mature Neolithic phase or ceramic phase. The Bommakkanahalli has yielded crude, unpolished hand axe, which suggests that it belonged to aceramic phase, while Konasagara and Nunkemale have yielded polished stone implements belonging to ceramic phase like that of Jatingaramesvara and Brahmagiri. Interestingly, rock paintings have also been noticed near the Neolithic sites like at Konasagara and Nunkemale where red ochre and lime have been used as a medium to depict floral depictions in caverns. A. Sundara has noticed paintings of faunal representations probably that of a Deer and pottery at the foothills of Jatinga Ramesvara hill. Appayyahalli (Kudiligi taluk, Bellary Dt) has rock paintings Hirekerehalli and Basapura (Akshara gundu) too have paintings in caverns. Ash and slags were noticed in many of the sites. These could have been the resultant remains of extraction of metals like gold, copper and Iron (of later period) from their respective ores.

Predominantly gray coloured pottery is noticed which are probably made on slow wheel. A few sherds of red ware were also found. The main shapes of pottery include dishes of varied sizes and handis. Bowl is the most common shape that is met with in the region. Some designs like criss-cross, finger tipped impressions are also noticed in a few sherds.

Another important feature of the southern Neolithic culture is the presence of ash mound at the Neolithic site[19]. These ash mounds are found associated with the neoliths. Once again, the sites that are spread out in the northern parts of Karnataka have ash mounds while in the southern parts of Karnataka they are almost absent. The river valleys of Bhima, Tungabhadra, Ghataprabha, Malaprabha, Pennar, Krishna, Chinnahagari are dotted with ash mounds. Some places in Mehaboobnagar, western Kurnool and Anantapur districts of Andhra Pradesh also have ash mounds. These ash mounds vary in size and have radius of 5 mts and raise upto 4 mts. The Neolithic vestiges are found close to these mounds and therefore treated as a part of the Neolithic cultural assemblage. There are divergent views with regard to its origin and formation of these ash mounds[20]. Some of the ash mounds have also been subjected to excavation[21].

Ash mounds were noticed at the following places in the taluk and they are: Brahmagiri, Nagasamudra, Hanagal, Venkatapura, Santegudda, Bandravi, Hanumanagudda, Jatingaramesvara, Hirekerehalli and Kelagalahattî. Most of these have been destroyed due to intense agricultural activities. Gray ware, Black and Red ware, black ware and early historic red ware pottery were noticed at these sites. The Megalithic phase overlaps at a few places. Locally these ash mounds are called by different names like *Budigumpalu, Budimatti, Budadidibbamu,* etc, suggesting a strong Telugu influence as this area is situated very close to the present day Andhra Pradesh[22]. It is curious to note that these mounds are concentrated in the Doab regions (Krishna and Tungabhadra). With regard to the distribution of Neolithic sites, the southern part of the taluk has one site (Konasagara) while the northern part has maximum number of sites. The physiography of the region plays an important role in the settlement pattern. The southern part of the taluk is relatively plain offering less raw materials for the Neolithic man while the northern part has hillocks offering natural caverns and abundant with raw materials that are required for the manufacture of implements.

In the month of January 2007, exploratory field work was conducted jointly with Mr. Moovendran in the Mosalayyanagudda area near Vittahala temple at Hampi in Hospet taluk of Bellary District. During the course of field work a huge cave having intense human activities belonging to Neolithic phase was brought to light. The cave is situated overlooking the area where, excavations were conducted by the Archaeological Survey of India, Bangalore Circle, under the guidance of Prof. A. Sundara in the year 2001-02. Three trenches were laid and a rammed mud floor, child pot burial, pottery and other antiquities assignable to the Neolithic phase were recovered during the course of excavation. The cave which is very close to this area has a huge settlement area strewn with pottery, Neolithic implements, antiquities, floor level and burnt clay. A partition wall using rubble stones to divide the cave area was noticed. Rubble stones are used make staircase is also noticed. The granite stones are effectively used to make steps of the staircase and leads into the cave. There are many entrances that lead into the cave's central area. Burnt charcoal, clay and ash found in the cave area attest to the fact that intense burning activity in the cave. Further explorations and excavation in this cave would certainly throw new light on the Neolithic settlement of this area.

With the discovery of a good number of sites there is a need to re-look and reassess the Neolithic phase of this region in particular and Karnataka in general. A large number of ash mounds are found notice in the vicinity of Neolithic site and more importantly they located very close to the mining areas. Therefore it would be apt to reconsider the Neolithic phase with the mining activities as well as extraction of ores from their respective ores. Further study may be reoriented to explore the possibility of such an association between Neolithic community and extraction of metals. The Neolithic implements may be been utilized for the extraction of metals like copper, gold and silver. Further the presence of large number of Asokan Edicts, of Early Historic period, at Bramhagiri, Jatingaramesvara, Maski, Nittur, Udegolam and Koppala near the Neolithic sites have to studied in its proper perspective. Further excavation and micro-study of this region has to be undertaken to bring out the socio-economic and cultural milieu of this region. Generally the Neolithic phase of this region may tentatively be given a date of *c.* 2500-1500BC.

Table

Sl. No.	Name of site	Findspot	Associated material
1	Bandravi	Foothill, below the present habitation	Ash
2	Basapura	Foothill and Hill	Rock engravings
3	Bommakkanahalli	On top of the hill	Polished stone axe
4	Brahmagiri	Foothill and Hill	Excavated polished stone axe and other materials 5
Halekere		Foothill	Grey ware
6	Hangal Axe, adze, ash, Grey ware	"	Polished Stone
7	Hanumanagudda	"	Ash
8	Hirekerehalli	"	Ash, Grey ware, rock engravings
9	Jatingaramesvara	Foothill and Hill	Grey ware, ash, rock engravings
10	Kelagainahatti	Foothill	Grey ware, Ash
11	Konasagara	Village	Polished Stone Axe
12	Nunkemale	Foothill and Hill	Grey ware, ash, rock engravings and paintings
13	Santegudda	Foothill	Ash and Slags
14	Vaderahalli	On top of the hill	Polished stone Axe
15	Venkatapura	Open field	Polished stone Axe

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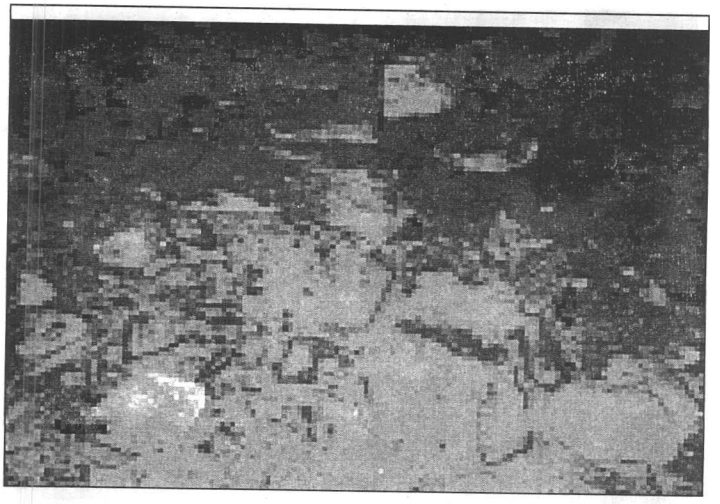

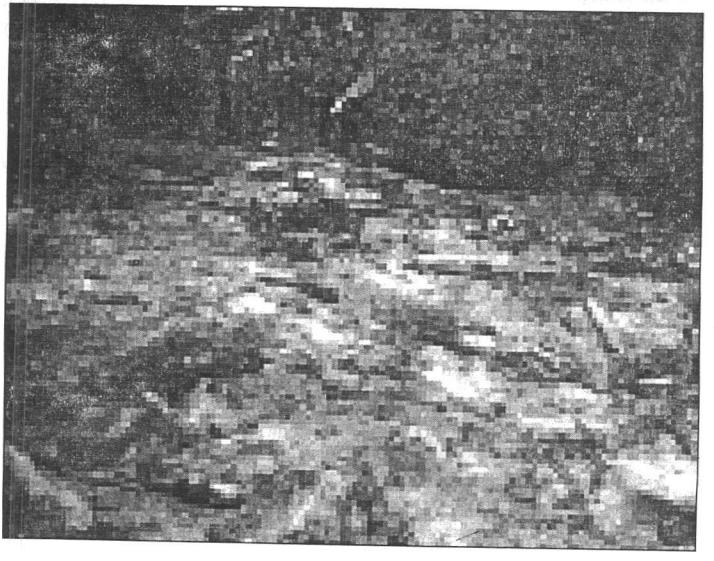

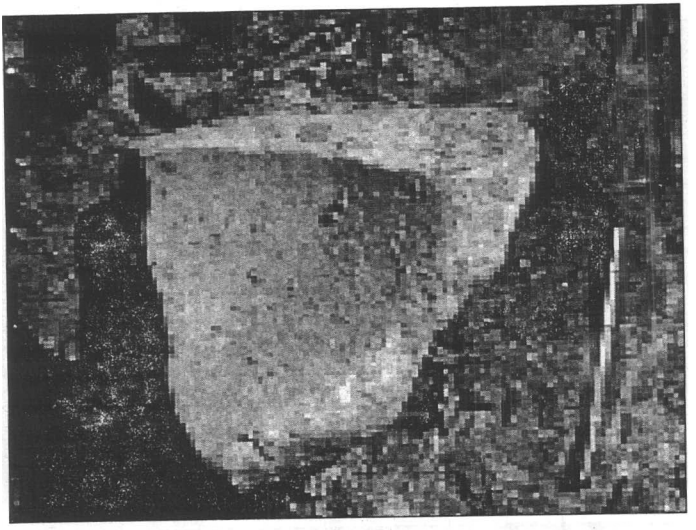

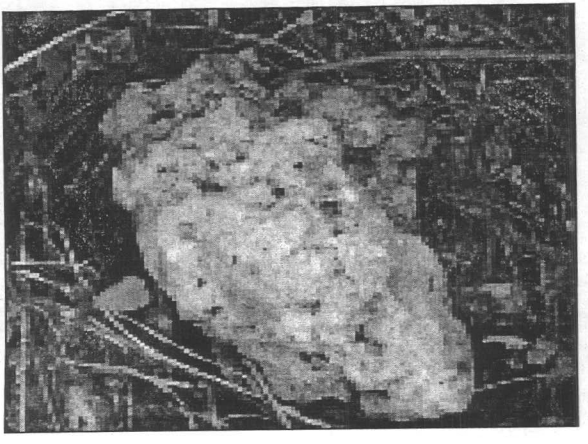

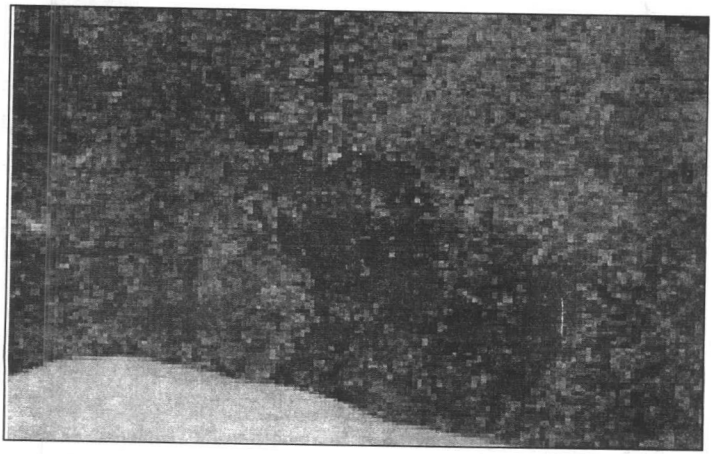

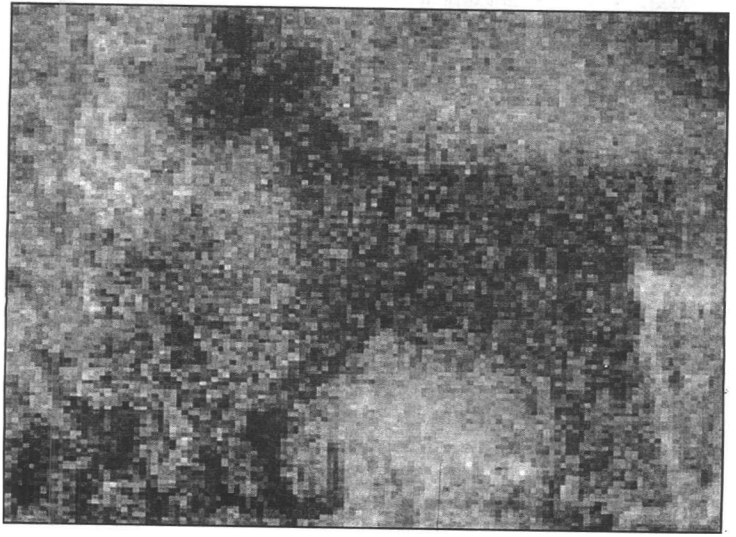

RECENT ARCHAEOLOGICAL ASPIRATION AND THE GROUND REALITIES IN TAMIL NADU

Arun Malik

The recent discovery of Neolithic Celt with Harappan script by the Department of Archaeology, Tamil Nadu has created enormous questions than solving the problem of decipherment of the Indus script and the very reason that we all are under one roof to search the single answer to the numerous questions by different ways. I personally believe that the discovery of Neolithic Celt with Indus script has created clots in our understanding of ancient cultures.

The discovery of a Neolithic stone Celt with the Indus script on it at Sembian-Kandiyur in Tamil Nadu is, according to Iravatham Mahadevan, "a major discovery because for the first time a text in the Indus script has been found in the State on a datable artefact, which is a polished Neolithic Celt." He added: "This confirms that the Neolithic people of Tamil Nadu shared the same language family of the Harappan group, which can only be Dravidian. The discovery provides the first evidence that the Neolithic people of the Tamil country spoke a Dravidian language." Mr. Mahadevan, an eminent expert on the subject, estimated the date of the artefact with the Indus script between 2000 B.C. and 1500 B.C. (The Hindu dated 0 1 May 2006).

There are two different cultural identities when we take the so called discovery of Neolithic Celt. First is Neolithic Culture and second is Harappan Culture. Let us take one by these cultural phenomena to understand their cultural identity.

Harappan Culture

A good deal of research has been carried out on the different aspects of the Harappan civilization since the discovery of the two important sites; Harappa and Mohenjodaro in Indus Valley, more than seven decades ago. In spite of all these efforts, the Harappan culture still remains an enigma. Recent excavations have brought new facets of this culture to fore. However, in recent years, with the inputs of systematic and methodological approaches, the understanding about this enigmatic culture has increased many folds. Therefore, many old concepts

about its beginning, development and survival have either been expanded or replaced by the fresh hypothesis.

With innovative ideas and stupendous adaptive nature, the Harappans survived for a long period of time, spanning about four millennium years, showing stages of development, maturity and finally decline. One of the important aspects of the Harappans that kept them in good stead and surviving for such a long time was their apparent mobility and proliferation over a large area consisting of number of Eco-zones with diverse environmental variables and economic incentives (Chitalwala, 1989). The Harappan has demonstrated their knowledge in selecting suitable environmental niches during their multi-directional expansion. These factors and accessibility to natural resources were largely responsible for the growth, expansion and long survival of the Harappan culture. The Harappan seems to have occupied various regions for specific purpose, for procuring raw materials, availability of suitable agricultural land, strategic position, mobility and communication or excellent pasture for their animal folks (Bhan, 1989).

The gradual development of the Harappan community from Neolithic phase at Mehrgarh has been traced within the Indian sub-continent (Jarriage, 1980). The developmental phases of the Harappan culture have been termed differently by various scholars.

Traditionally, the Harappan civilization was compared with the material culture recovered from the sites of Mohenjodaro. This phase came to be known as the Mature Phase of the Harappan culture or "Mature Harappan Culture". Anything that stratigraphically proceeded this phase was identified as "Pre-Harappan Culture" or "Proto-Harappan Culture". The phase succeeding the Mature Harappan occupation was termed as "Late Harappan Culture". Mughal (1970:359-378) developed the term "Pre Harappan and Early Harappan" for the incipient phase of the Harappan culture. Early Harappan for him is the assemblage that stratigrapically precedes the Mature Harappan occupation and contains a number of cultural traits that are characteristic of the subsequent Mature phase. Pre-Harappan occupation falls between the pre-pottery Neolithic and the Early Harappan phase.

Possehle developed an alternative scheme describing the Harappan occupation as Pre-Urban, Urban and Post-Urban Phase (Possehle, '1977, 1990). The Pre-Urban phase goes back to the initial development of food production in the Indus Valley and encompasses the Pre Harappan and Early Harappan Phase of Mughal. He however clearly defined a little understood Post-Urban phase of the Harappan culture.

Neolithic Culture

The Neolithic culture as we understand by its nomenclature is Neo means new and Lithic means stone, for common mans understanding it is new stone age culture just after Mesolithic culture and just before the Chalcolithic culture as a whole.

There are cultural traits which make the Neolithic culture different than that of cultures pre dates and as well as the cultures to follow them. It is the stage of human culture where human beings started their quest for the civilization and they were able to domesticate animals and do the rudimentary agriculture. They not only succeeded in making first ever wheels but also they achieved some control on fire. These Neolithic folks have developed the concept of village or we can say the community in larger interest.

The Neolithic culture in India has wide spread culture and not like the Harappans, who rather believed to move within their selected Eco-Niche. Neolithic culture in India can be divided into three groups on the basis of their geographic location and distinctive tool kits. Firstly, Neolithic culture of North India, which comprised of sites like Burzoham and Gurfkral in Jammu and Kashmir; secondly, Neolithic culture of Eastern India, which comprised of sites in Bihar, west Bengal and Northeastern frontier states like Assam etc. and thirdly, Southern Neolithic culture, which comprised of sites of Karnataka, Andhra Pradesh and Tamil Nadu.

As far as Tamil Nadu is concerns there are only few Neolithic sites which can be dated within the time frame of circa 2000 B.C to 1500 B.C. There are only two excavated sites i.e. Payampalli and Appukal both in Vellore district out of some 53 reported sites. Most of these reported sites are either find spots or in the secondary context so nothing important can be ascertained from these sites. More, importantly these sites are from only one particular region of Tamil Nadu i.e. from Dharmapuri, Coimbatore and Vellore and falls within the core group of Karnataka Neolithic group or we can put it like this that they falls within one Eco-niche. But rest of the Tamil Nadu yielded only few rather scanty finds of Neolithic tools.

Again let us take the discovery of Neolithic Celt and the so called script on it in details. According to Iravatham Mahadevan, "a major discovery because for the first time a text in the Indus script has been found in the State on a datable artefact, which is a polished Neolithic Celt." Let us forget the script for a while and concentrate on Neolithic Celt. It is well understood by the Archaeologist that

mere finding a Neolithic Celt at any place, it is impossible to assign any date or any cultural identity to that site or place because we need to have atleast some other artifactual evidence to support the finding. If a Neolithic Celt is found in a Megalithic context can we assign that site to be Neolithic site? "NO". If single Mature Harappan potsherd found at any Early Historic site, we can not assign that site as a Harappan site. In our quest of Harappan civilization we already did some major mistakes in recent past and designated several Early Historic sites to Harappan site by mere finding a single or few Harappan potsherds. It is our own duty of young Archaeologist to find the truth and not to play with truth.

Before going into the details of Harappan script on Neolithic Celt, let us examine the Harappan script as a whole. It is elegant, smart, and distinctive and a piece of artistic repute. We examine all the scripts on the seals and sealing and other graffiti's on potsherds and found that whenever they have been depicted they are perfect lines, deep incisions and prominent.

The Indus scripts are mainly found on seals and sealing and as Graffiti on potsherds. The main features of these scripts are as follows:

1. The stamp seals of Harappa, Mohenjodaro, Lothal, Chanhudaro, Kalibangan, Dholavira, Rakhigarhi, Bagasara and other sites covered in Intaglio with beautiful animal figures, are masterpieces of art noted for their realism.
2. The calligraphy of the short inscription on the seal is known for symmetry of size engraved.
3. The average size of the seals is 3x2 Cms and the average size of the signs is 0.5xl Cms.
4. More than 3000 Indus seals and sealing have found throughout the Indus Empire.
5. Their concentration and use was mostly restricted to industrial and commercial centres like Mohenjodaro, Harappa, Chanhudaro, Kalibangan, Dholavira, Rakhigarhi, and Bagasara.
6. The seals are generally made of steatite, a soft stone of blue to grayish tinge but sometimes Copper, Ivory, Agate, Chert, Faience and Clay were also used.
7. The whole process of sawing blocks of steatite to required size, cutting of buttons on back, engraving the motif and script is fairly clear.
8. Engravers of copper might have been used for engraving the device and inscription on seals (Bhirrana: Harappan site, Haryana, Excavated by Nagpur Excavation Branch under the Direction of Shri L.S. Rao, SA, Nagpur Excavation Branch).

So, we have seen how the writings were made on very selective manner for specific purpose only. It is always made for commercial or industrial use and representing a guild of traders or manufacturers.

After careful examination of the so called Neolithic Celt with Harappan script we can say that it is only a "Neolithic Celt" with some pitting marks which can be naturally worn by the stone itself. Moreover, the butt end of the Celt is being used as grinder may be in recent time which is evident by its greasy appearance and also the material is hard it is not possible to write on the surface without any harder engravers or chisel. There is no question of any script like thing on the Celt because we know from the past seventy years of continuous and systematic study of the Harappan Civilization that the writing in any form during the Harappan period is always with specific motive and there is always a message in that. It is another question that we are not able to understand what exactly these seals and sealings are conveying to us. Several scholars have tried and achieved some sort of understanding about the enigmatic script but all that remains futile always because none of these efforts have generated any kind of consensus.

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THE MARITIME ACTIVITIES OF THE ANCIENT TAMILS AND INDUS VALLEY CIVILIZATION

K.V. Ramakrishna Rao

Introduction : The Maritime activities of the ancient Tamils have literary evidences in Tolkappiyam, the ancient extant Tamil work and the Sangam literature datable to c.1000 BCE and 500 BCE respectively. However, the seafaring activities of the people of IVC is dated to c.3,500 BCE to the peak period 2250 to 1950 BCE. The recent Sembiyan Kandiyur Neolithic finding has also been dated to c. 1,500 BCE, where historians have not recognized any "State formation" in the ancient Tamizhagam. Again archaeologists assert that Neolithic culture in Tamil Nadu is datable to 2,800 B.C. to 500 B.C., and megalithic culture from 500 B.C. to 100 C.E.

Even the post - Sangam Imperunkappiyangal have been glorifying the seafaring merchants and trading communities. The trend continued with the Pallavas and the Cholas, till the Arabs started gaining control in the west, China in the east and ultimately European dominance started in India itself. However, the presence of Pallava inpact SEA countries and even in Maldieves has not been studied properly. The books published on the shipbuilding technology based on manuscripts do not give details as one expect, as the editor or commentator obviously do not deal with technical details. Of late, even the over-sea expedition of the Cholas has been questioned suggesting that the Rajendra's maritime sojourn to SEA countries could be the excessive imagination of the poet, who rendered the text for the Tanjore inscription.

Under such cirumstances, the connection between the ancient Tamils and that of IVC is studied taking certain specific areas as follows :

Whether the Sangam literature can be correlated with IVC? The Western Indologists and IVC scholars based on Vedic studies tried to correlate the "Aryans" with IVC. Accordingly, Dravidologists have to consider the "Dravidians"

of the Sangam period and their literature. The Sangam poets, flourishing from c.500 BCE have not mentioned anything beyond Ganges except Himalayas in the north. As for as the north-west is concerned, their knowledge has been NIL. For them the Southern Direction had been sacred as has been revealed through certain references mentioned. The end of IVC peak period c.1950 and the start of Sangam period c.500 / 300 BCE has to be linked and the gap explained. This has been the main problem for Indian history also. Therefore, for direct correlation, correspondence and connection, more material evidences have to be produced for the acceptability of historians. One among the issues is taken up and attempt has been made to correlate as follows.

The Maritime Capabilities of the Ancient Tamils : to correlate the archaeological evidences of the ancient Tamils with that of the people of IVC, the literary evidences are considered, as the existing archaeological evidences do not go beyond c.2,000 BCE and the historic period c.500 BCE. Well established port, port administration and taxation on the metirial are mentioned. *(புறநானூறு: 126 : 13–16)*

The sky high building had enclosures at the top, where lights were lit during the night. The glowing light was controlled by a stick.

விண்பொர நிவந்த வேயா மாடத்
திரவின் மாட்டிய விலங்குசுடர் ஞெகிழி
உரவுநீ ரழுவத் தொடுகலங்கரை (பெரும்பாணாற்றுப்படை. *348–351)*

Shipwrecks are succinctly portrayed by the Sangam poets as

கரைகாணாப் பௌவத்துக் கலம் சிதைந்து ஆழ்பவன்
திரைதரப் புணைபெற்றுத் தீதின்றி உய்ந்தாங்கு (கலித்தொகை. 132:6–7) =

Niggan, a trained ship repairing expert, also experienced sailor knowing the directions were existed. Ships were anchored with ropes tied to anchored.

மாக்கடற் பெருங்கலங் காலின் மாறுபட்
டாக்கிய கயிறரிந் தோடி யங்கணும்
போக்ன பொருவன போன்று.... (சீவக சிந்தாமணி 2231)

Naval fleet is mentioned in 1776, 1801, 2597, etc. and there have been abundant references about asterism, planetary motion etc. Thus, from the above, the shipbuilding techniques of the ancient Tamils cannot be doubted.

Coming to the archaeological evidences, NIO[3] and Tamil University[4] researching scholars have reported certain stone anchore findings in the coastal areas of South India. However, cautiously, they report about the dating "from the literary and archaeological evidences it can be safely presumed that the usage of stone anchors would have prevailed from the 3rd century BCE...". Therefore, unless material evidences are produced, the above literary evidences cannot be correlated and substantiated.

Shipping and shipbuilding technology of the Ancient Tamils : The reference about the subject matter as found in the Sangam literature is not repeated, as they have already been pointed out by many scholars in various contexts one way or the other. Only the ship builing technology, which has not been dealt with so far and which doubted by the modern scholarship, is discussed here:

Civaga Cintamani (verse no. 882) mentions about the existence of "books on the knowledge of Oceans", which is very significant in the context:

வாண் மின்னு வண்கை வடிநூற் கடற்கேள்வி மைந்தர்
தான்மின்னு வீங்கு கழலான்றனைச் சுழமற்றப்
பூண்மின்னு மார்பன் பொலிந்தாங்கிருந்தான் விசும்பிற்
கோன்மின்னு மீன்சூழ் குளிர்மாமதித் தோற்றமொத்ததே.

The sailors of all categories - traders, businessmen, should be warriors and also good navigators with the knowledge of shipping, astronomy, geography and oceanography were prevailed.

The mention of availability of books on the knowledge of Oceans is significant.

"The Books on the Knowledge of Oceans" covers all aspects of Ships, shipping etc.,

That the sailors should be capable of handling swords and such books is also significant considering the dangers involved in ocean-trade, visiting many countries, the nature of people dealt with in trading etc.

Interestingly, both the Science of Ocean and the Sky are mentioned together in the same context figuratively.

Kappal/Navai Sattiram - Science and Technology of Ships and Shipping: Indians used to write books on Palm-leaves, particularly, in South India. They

used different scripts to Sanskrit and Tamil languages on various subjects. Most of the original Sanskrit books are missing either destroyed or taken away by the Mohammedans for study and also by European missionaries. As the demand for books increased with the exigencies, more books could have been produced engaging the scribes. An expression, "Tiruppugira Pusthakam" found in "Kappal Sttiram" (Science and Technologhy of Ships and Shipping) proves that copies of books were made from the translations and as well as originals. The expressions "Edu Tiruppudhal" (turning the pages) and "Tiruppugira Pusthakam" (the book that is turned) convey copying a book from its original, so that the original could be preserved and the copy given away or sold. As per the directions of the Danish, in the house of Kangirayap Pillai or Kaligarayap Pillai, a Dubash, the book was dictated and a scribe had written down. The name of the book is mentioned as "Nikamasigamani", a Sanskrit name. As the last line of 8th song clearly mentions that, "Salaikathirangan sorppadi idanai tamil seythittan", it is evident that as per the directions of one Salaikathirangan, it was made into Tamil i.e, translated into Tamil from Sanskrit. As it was known that there was a work named "Nauka Sastra" in Sanskrit, that book might have been used for translation. Here, Kangriyap Pillai says that he is producing the book as per the directions of Danish in 1620 (of Salivahana Era) or 1698 of CE in his house. So the Danish tried to get the science and technology books from the Indians.

The book gives the following details.

The standard measurement (Verse.3).

The time suitable for manufacture of ocean-going vessels is given astronomically based on an earlier work, "Nigama Sigamani" (நீகம சிகாமணி, Verse.4).

The properties of ships (5).

The suitable time for navigation (6-9).

The best time for fixing of mast (13).

A Tamil king "Parasi Vendan"; when it might face with danger; when a ship may wreck and such other exigencies are mentioned (23-28). Thus, it is amply evident that the Tamils knew the ship wreckage occurred as a result of piracy. As they followed the rules and regulations of nature and sailed in the prescribed time, the wreckage due to natural disasters like tempest, cyclones, rough weather etc., must have been minimal.

Mathematics involving points / dots is mentioned (29). As it is not explained, it is not known exactly what mathematical method or mathematics involving points were used in the maritime context. But, it must have been connected with Cartography making points on the maps drawn, developed, corrected and modified. In those days, maps could have been produced only after undertaking any voyages. Ironically, such projection in navigation charts used is known as `the Mercator,' (1512-94), who reportedly devised it . But it is evident that they must have known from Indians, as existence of such method is mentioned here.

Experts of Books without any weariness (31). It is mentioned that these details are given by the Experts of Books without any weariness implying that they exclusively engaged in such observatory and cartographic work making projections etc.

When a ship with cargo the destruction would occur (33) is mentioned.

A ship would return successfully with earned profits after selling the goods aboard (37) is mention. These two exigencies have been given in astrological interpretation, but involving astonomical observation. The Tamils must have found out the arrival of Arab and European vessels to SEA countries at a particular time, as their starting with winds from their destinations had been different from that of Indians. However, they tried to coincide with the timings of Indians with an intention to compete initially and then seize cargo by piracy realizing their law abiding nature. Moreover, the cunning Arabs and Europeans must have used Indian flags, symbols, dress etc., to cheat the Indians to complete their piracy.

Persons with two eyes and one eye are compared figuratively with Sun and Moon. Danger to cargo would come from the persons with one eye (39), as they stealthily attack other vessels without following any marine-ethics or Maritime regulations. This is clear indication that Tamils knew of the nature of pirates, who were not Indians, as they were not following the Indian ethics of not attacking the vessels of others. Incidentally, the western depiction of standard pirates have been "one-eyed"!

Interestingly, another point implied is about the persons with "Surya dhristi", "Chandra dhristi", "Raja dhrist", Griha dhristi", "Rakka dhristi" etc. They were nothing but persons with eye-sight of Moon, Sun, king, Planets, sides etc. in other words, the ocean going ships had such experts/observers of Solar, lunar, planetary motions and time calculations. As they had to visit different countries, they had to know about the Kings of such countries, thus the experts of Kings. And

there were experts in observing directions also, as it is important in navigation. As such things could have been possible with past experience, it is evident that the experts mentioned must have had books on such subject matter.

Suddenly, the work changes from poetry to prose giving statistical details of planets, asterisms, stars etc.

Thus, the measurements for masts are given.

The measurements for anchors are given.

Measurement details of a "English ship" is given.

At the end, it is appended with "Silpa sastram" (A Manual of Sculture) only with 13 verses.

As most of the verses have been written with defective words, language and grammar, it is evident that the Danish must have engaged poor scribes to write this work.

Many verses have been adopted or imported straight away from the following earlier works:

சரஸ்வதி அந்தாதி, சோதிடகிரகசிந்தாமணி, கணக்கதிகாரம் and நீகம சிகாமணி

However, the scribe has not acknowledged the source.

As the work has been incomplete in many aspects, it is evident that the copy has been only a part of a bigger book.

The Navai Sarittiram published in 1995 also proves the fact.

In view of the above, it is evident that before the Cholas-Pallavas period, there must have been books on astronomy, shipbuilding etc., and they must have been copied and circulated throughout India. As the Arabs / Mohammedans first and the Europeans later started wholesale collection of Indian palm-leaf books, Many important books must have still been in the archives, libraries and private collections of westerners. Therefore, absence of evidence cannot be taken as an evidence to deny the incidence happened or taken place in the past. The finding of coins of Romans, Chinese etc., and the goods of South India / ancient Tamizhagam have been found in many ancient civilizations, the maritime capabilities of the Tamils cannot be doubted.

Conclusion: In view of the above the following conclusions are drawn:

1. The Sangam literature evidences amply prove the seafaring and maritime capabilities of the ancient Tamils from c.500 BCE.
2. The scientific details as pointed out have been so interesting and the poets could not have recorded such events just out of their poetic fantasy or imagination.
3. The astronomical knowledge of the Sangam Tamil and that of IVC could not be compared and correlated, because of the chronology gap.
4. The gap between the IVC peak period c.2250-1850 BCE and the Sangam period c.500/300 BCE has to be explained historically with evidences.
5. The literary evidences pointed for the maritime activities, shipbuilding, repair, shipping technology etc., should correlated with the archeological evidences.
6. The dating of stone anchors has been done on relative method, as has pointed out and therefore, it should be correlated with other method, as otherwise, the literary evidences could not go beyond c.500 BCE.
7. The dating of Sri Lankan Brahmi before that of Tamilnadu, the existence of "Pallava inscriptions" of SEA countries dating before Indian inscriptions are debatable points.

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THE IMPACT OF CERTAIN RELIGIOUS ASPECTS OF INDUS (HARAPPAN) CULTURE ON TAMIL CULTURE

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The First great city or urban Culture known in India, popularly known as Indus valley (Harappan) civilization, which flourished during the third Millenium B.C., extended from Jammu in the north to Narmada estuary in the south and from Makran coast of Baluchistan in the west to Meerat in the north-east covering a vast area. Even though the remains of the Indus valley civilization have been brought to light from a number of site's this civilization is still best known by the two sites, Mohenjodaro (the place of the dead) situated in the Lakana district of Sindh and Harappa located in the Montgomery district of Punjab both Pakistan. Other important sites of this civilization Chanhudaro, (situated 128 km south of Mohenjodaro, Suktagendor also popularly known as Sutkagendor, (located in Baluchistan), Ali Murad, (30km from Sindh), Kot Diji, (a town in Pakistan), Kalibangan and Banawali (both in the Hissar district of Haryana), Alamgir (32 k.m. from Meerut) Rangapur (a town in Ahmedabad district of Gujarat), Surkoṭada (in the Kutch district of Gujarat), Kalibangan (in the Ganganagar district of Rajasthan) etc., These sites have yielded a number of terracotta female figures, many figures of the Divine Mother Goddess on pottery seals, amulets etc; pipal and Aeacia trees noticed in the seals and painted pottery, the great bath complex, the engravings of various animals, the seals with intriguing inscriptions, etc., offer some noteworthy clues to the religious practices of the Indus people, the study of which reveal to some extent the impact of certain religious aspects of Indus (Harappan) culture on Tamil culture.

The Cult of Muruga Worship

Murugan, who is otherwise known as Kumaran, Mal Marukan, Kay Kadavulcey, Veri kondan, Neduvel, Viravel, Alamar Selvan Makan, Velan, Irai,

Aruntiral Kadavul, Malaiyurai Kadavul, Korravai Ciruvan, Cevvel etc., might have been a very popular deity both in Indus civilization and Tamil Culture.

The sign of 'two intersecting circles' which was popular in the Harappan civilization is considered by some scholars to denote the Dravidian word 'Muruku' which means both bangle and a male child. Another sign of six lines by the side of a fish also is believed by some scholars to represent God Muruga. Another sign, in which a skeletal body, with a prominent row of ribs, shown seated on his haunches, body bent and contracted with lower limbs folded and knees drawn, is also read as 'Muruku'. This Muruku symbol has also been identified from the pottery graffti at Sanur, a megalithic site, and a pottery graffiti found at Mangudi which belongs to the late Megalithic Iron Age.

The Indus script with four signs engraved, on a polished hand held Neolithic celt discovered from Sembian - Kandiyur near Mayiladuthurai, in Nagapattinarn District has drawn the attention of many scholars. The first two symbols of the above said text are incised by making dots continuously. The next two are line engravings. The first sign, is suggestive of divinity -and the skeletal body gives the linguistic clue to the name of the deity (Murukan) according to Sri. Iravatham Mahadevan. This land mark discovery, confirms the presence of Harappan influence in Tamilnadu and establishes link between the Neolithic culture of Tamil Nadu and Harappan civilization. It is understood that the name 'Muruka' was very popular in Tamilnadu as early as the Neolithic period itself. The antiquity of Murugan (Ceyon) is clearly understood from the fact that he is the God of the people of the hilly region according to Tolkappiyar. It is generally believed that the mountain leaped up from the sea as the first part of the dry earth to be evolved even before non-rocky places came into existence. Even though Murukan (Ceyon) was worshipped by the people of the hill tract during the age of Tolkappiyam, in later period he was worshipped by all the people of all the regions. That is why his shrines were generally built on the hills.

Sangam anthologies speak a lot about Lord Murugan. This shows clearly the popularity of Muruga worship during the sangam period. For this the following references can be quoted as good examples:

"Alamar Selvan anisaal Makan" (Kalitthokai, Marudhak Kali, 18)

"Kaay Kadavut cey" (Paripadal, 5, 13)

"Maru midarru annarku Masilol thantha

Nerinir aruvi asumpuru selva" (Paripadal 8, 127-8)

"Manimidarru annarku Madhiyaral piranthoy" (Paripadal 9, 7)

"Korravai Ciruva" (Thirumurukatruppadai, 255)

"Al kelu kadavut pudhalva" (Ibid., 256)

"Ilaiyani cirappin palaiyol kulavi" (Ibid, 259)

Mother Goddess

From the fact that a largest number of terracotta female figures, and many figures of the mother goddess on pottery, seals and amulets have been collected from the Indus sites, it is clearly understood that the people of Indus civilization believed in female energy as the source of all creation; So, they might have worshipped the mother Goddess as the Goddess of fertility and crops. The cult of mother goddess seems to be the central point around which other religious practices and beliefs of the Harappan people were interwoven. Since the mother earth feeds the people with the yield of food crops, the above said mother Goddess might have represented the earth. Even though it is generally believed that the influence of the cult of the Mother Goddess once extented without break from the Indus to Nile, in no country the worship of the divine mother is so deep-rooted as in India where she became a prototype of the cosmic Energy *(prakriti)* and the counter part of the cosmic soul *(purusha),* according to sir John Marshall. These terracotta figures of the mother goddess are generally shown with a pinched nose,pellet eyes, and elaborate head dress with a fan shaped or arched frame work of some light material. These figures are generally shown in a standing pose with their arms mostly hanging parallel to the body. In an interesting seal from Harappa, a tree is shown as issuing out of the womb of the mother goddess. In some seals the mother goddess is shown standing in the bifurcated branch of a pipal tree. It is also very interesting to note that a worshipper is shown bringing a goat most probably to sacrifice it to the mother goddess in which a number of people standing in a row as if they were taking part in that sacrifice. The description of the water buffalo being speared apparently in sacrifice by a man recurs several times in Harappan Art. In an impression of a cylinder seal from kalibangan, two warriors are shown spearing each other, while they both are being held by

hand by a goddess wearing a head dress with a long pendent, bangles on the arms, Next to this scene, her body is shown merging with that of the tiger, which is the vehicle of the Hindu god. From the above said facts it can be safely concluded that the sacrifice of animals particularly goats, the most characteristic feature, of the worship of sakthi is the most significant survival from the Indus religion.

Many Navakanta sculptures are found in Tamil Nadu, in which the heroes sacrificing their own head infront of goddess Kali for the victory of their over lords. This may be the reminiscent form of Indus culture.

There is a clear reference to the scene of a tree in which the heads offered to the goddess Korràvai are hanging in Manimekalai (Chakkaravala Kottam 50-55) which proves beyond doubt that the cult of human sacrifice to the goddess. Many epigraphical references and sculptural depictions show that this custom was continued and practiced in Tamil Nadu during the pallava, Chola, Vijayanagara and Nayak periods. In a number of Durga sculptures, heroes are depicted as if they are offering their own head to the goddess. This practice shows that human scarifies was very common, in the worship of mother goddess.

The Potrayal of the images of Durga Mahishasura Mardhani, and the Goddess Lakshmi in certain coins of Tamil Nadu that dates back to 2nd, 3rd century AD, proves the popularity of the cult of mother Goddess in Tamil Nadu, The Chera kings were great devotees of Durga and they had worshipped the Goddess Durga on the hill of Ayirai as their family Goddess.

Thirumurugarruppadai points out the mother Goddess as Palaiyol (which means she is an ancient deity) and Korravai and mentions her as the mother of lord Muruga (Thirumurgarruppadai, 255, 259). In Tamil Nadu the cult of the mother Goddess was so popular that she was known by a number of names like, Thunankaiyam selvi (Paripadal, 459) Amari, Kumari, Gowri, Samari, Suli, Neeli, Aiyai, Ceyyaval, Veyyaval, Thadakkaippavai, Paikalaip pavai, Painthodippavai, Aikalaippavai, Arunkalappavai, (Silappathikaram, 12:66-70) Kadamar selvi (Mani Mekalai (6:53) etc.,

According to Silappadikaram (23:18 1) there was a temple dedicated to Korravai at the western entrance of the Madurai city of that period.

The Cult of Siva Worship

The most striking deity of the Indus culture is the horned God who is depicted seated on a platform (perhaps a throne) in the posture well known to latter Indian holy men. The platform (dais / throne) of this God is surrounded by wild animals, a rhinoceros and buffalo on the right and an elephant and tiger on the left and a pair of goats or antelopes below. This God wears a peculiar head dress, consisting of a pair of horns with a plant like object between them. The animals, the plant like growth from the head may indicate that he is a fertility God, This figure is represented with a second and third face on either side. This figure may be the prototype of Siva in the aspects of Pasupati or Lord of beasts. This fertility deity may be the earliest form of Siva of later Hinduism.

Hence it is generally believed that Saivism has a history going back to the chalcolithic age, or perhaps even -further still and thus Saivism becomes the most ancient living faith in the world as Sir John Marshall rightly observes.

As far as Tamil culture is concerned, even though Siva as a deity is not mentioned directly by the name Siva in the Ettutthokai and great epics, there are certainly some clear references to Siva in the Sangarn classics and epics for which the following passages are good examples.

"*Yerruvalan Uyariya Yerimarul avirsadai*
Marrarum Kanicchi Manimidarron" *(Purananuru, 56)*

"*Nilamanimidarru Oruvan*" (Ibid, 91)

"*Mukkat Selvan*" (Ibid, 91)

"*Nanraintha Neelnimir sadai Muthu Muthalvan*" (Ibid, 166)

"*Nanmarai Muthunun Mukkat Selvan*" (Akananuru 18 1)

"*Mukkannan*" (Kalitthokai, Mullai, 3)

"*Gangai Mudikkanindha Kannuthalon*" (Silappadhikaram, 12:9)

"*Piraimudikkannip periyon*" (Silappadhikarm, 11:72)

"*Senniyil ilampirai Sudiya iraivan*" (Ibid 22:86-7)

"*Kanmundru Udaiyan*" (Naladiyar, 400)

"*Piraimudik Kannip periyon*" (Kalitthokai, Mullai, 5)

A number of animal figures have been noticed in the Indus seals. Among them, short horned and humped bulls, antelopes, elephants, rhinoceros, tigers and crocodiles are noteworthy.

Some of these animals might have had a big part in the religion of the Indus people. On many seals the bull is noticed standing before a peculiar object which may be a cult object, probably a table on which corn was grown for fertility rites. This peculiar object can also be an incense burner. Nowadays the bull is strongly associated with Lord Siva, and he is represented as Nandi in all most all temples. The origin of this divine bull culture can be traced from Indus culture.

Chippings on two edges of the base of the Neolithic celt with Indus script, collected from Sembiyan Kandiyur make the celt look like the head of the bull, as noticed by Sri. S. Kalyanaraman. So, it is understood that this particular celt might have been an object of worship as bull *Nandhi* of Lord Siva.

The Cult of Siva Linga Worship

The cult of Sivalinga worship also is traceable from Indus civilization. From the availability of a number of conical and cylindrical polished stones, mostly small up to two feet or more in height, that look exactly like a Shivalinga, it can be safely concluded that Phallic worship was an important element of Indus civilization. It is noteworthy to note that even today Siva is being worshipped more commonly in the form of a Siva linga the symbol representing the God Siva, than in the form of an icon.

Tree Worship

The very ancient and deep rooted cult of tree worship is noticed both in Indus civilization and Tamil Culture. Certain trees were worshipped by the Indus people as sacred. An interesting seal depicts a horned goddess in a pipal tree, which was believed by the Indus people as the tree of creation and knowledge, worshipped by a figure also wearing horns, with a human headed goat watching the ceremony and a row of seven women probably priestesses, in attendance. From some seals it is understood that the sacred trees are well guarded and protected. The scene of a bull, protected by a cobra, fighting with a man to prevent him from coming near the sacred tree is depicted on a sealing at Mohanjadaro. In another seal a bull is seen fighting with a male to protect an acacia tree. Buffalos,

headed goat guarding an Acacia tree is represented in one seal. Several tablets illustrate worshippers kneeling with an offering jar in their hand in front of a tree. A number of Indus tablets depict trees with railing.

The impact of this ancient cult of tree worship, which was very popular in the Indus civilization, is noticed in the Tamil culture also. An akananuru (309, 4) verse associates certain neem tree with certain deity. (தெய்வம் சேர்ந்த பரா அரை வேம்பில்) Banyan tree is metioned as an abode of certain God in a Kali verse. From such facts it is very clear that certain trees were worshipped in the sangam age in Tamil Nadu.

In sangam age coins like the *kollippurai coin, kollirumburaiyan coin* etc., a tree with railing is depicted in the obverse side. Generally the *Panai, Atthi* and *Vembu* trees were considered to be sacred ones as *kaval maram* of the chera, chola and Pandya kings.

One Paripadal verse points out that Cevvel resides under the *Kadambu* which is sacred to him and he also wears the garland of *Kadambu*. This sacred tree is also adorned and worshipped by the devotees. Purananuru and Madurai Kanchi mentions that Kadambu tree was worshipped by the devotees. (puram. 75, Madurai 613,614). One Marudhakkali verse names Lord Siva as *'Alamar selvan'* (No. 18) Murukarruppadai (256) Silappadhikaram, Manimekalai etc., also variously call him as *'Alkelu kadavul'* and *'Almar Selvan'*. In the same manner, Perumpanarruppadai names lord Muruga as "*Kadambamar Neduvel*"

It is generally noticed that most of the sacred places, are having a combination of *Sthala, Vriksha and Tirtha.* Sthala vrikshas are also worshipped by the people along with the God and Goddess of that temple.

The Great Bath

The rain, the rivers, the tanks etc., which are considered to be the source of all fertility are looked upon as God. It is because of this concept, Thiruvalluvar has placed the chapter *Van cirappu* next to *Katavul valtthu* in Thirukkural. Purification by bath might have been an important feature of the religion of Indus valley. The rectangular tank 39 x 23 and 8' deep discovered at Mohenjodaro, constructed of brick, provided with proper steps leading to the bottom of the tank at the north and south ends, might have been used for ceremonial purposes. Since

this tank is believed to be meant for elaborate ritual of vital importance for the people of Indus civilization, it is popularly called as 'Great Bath'. This tank was provided with a paved walk at the top, around which is noticed a fenestrated wall with a cloister wall 7' wide running almost around the bath on all sides. From the fact that the floor and side walls of the tank were rendered water tight by the use of gypsum in the mortar, while the side walls were further backed by a damp proof course of bitumen which is believed to have been obtained from a long distance to make this tank completely airtight, three wells dug in the neighbourhood to fill this tank with water at regular intervals and the arrangements made for carefully emptying this tank through a square hole in a corner into a passage whence it was carried through a culvert, it is clear that this great bathing establishment had played an important and unique role in the Indus civilization. Around this tank is seen a pillared veranda from which there was access to a row of rooms what might be called dressing rooms for the use of those who had holy dip into that tank.

The long headed gharical which is so common on Indus seals usually represented with a fish in the mouth seems to represent a river god or goddess, a cult which survives in sindh to the present day. People praising and adoring the Vaigai river, and presenting garlands and other offering just like worshipping the god. Thirumal and Cevvel are narrated in detail in Paripadal poems. According to Cilappadhikaram while entering into Madurai, Kovalan and his wife Kannaki, worshipped Vaigai river.

As it is pointed out in a Narrinai poem there was a custom in Tamil Nadu that a Women who gives birth to a child should have to take bath in fresh water. In Ainkurunuru there are ten verses which are popularly known as 'Punalattuppattu' in sangam classics. *'Tai Niradal'* the custom of sacred bathing in the month of *Tai*, collectively by a group of girls, finds a note in the sangam classics like Ainkurunuru, Narrinai, Kalittokai, etc., *Markali Niradal* and *Tai Niradal*, the sacred penance of bathing, is also known as Ampavadal are narrated in detail in Tiruppavai and Tiruvempavai, which spread upto Siam in the names of "Lorippavay" and "Lo-Jin-Ja". Tiruvatirai festival celebrated by young girls in the month of Markali, popularly in Malabar also seems to be the same as the above said sacred bathing festival. Since Goddess prayed by the girls during the period of their penance of sacred bathing seems to the *'Paracakti'* as pointed out by proof Dr. R.Sarangapani, we can safely conclude that the above said

sacred bathing is closely related to the worship of mother goddess which was very popular in the Harappan civilization.

In some of the sangam age coins of Tamil Nadu, tank has been depicted as a sacred symbol. In the coins with the legend *"Ko-l-li ru-m-pu-rai-yan"*, a tank with fishes is seen in the reverse side, and in the Kollipurai coin turtles within a square tank is noticed in the reverse side. From this it is very clear that the 'tank' was considered very sacred by the kings of Tamil Country.

Certain terms like 'Kadal Kelu selvi' (Akananuru, 370), 'Thurai Ananku' (Ainkurunuru), 'Undurai Ananku' (Ainkurunuru) etc., seem to refer to certain water deities that are residing in the sea and tanks. So the cult of water deities and holy dip are common feature both in Indus civilization and Tamil culture.

Nowadays, almost in all temples we are having holy tank *(Teppam)* popularly known as the 'Tirttam' of that particular temple. Floating festivals generally known as *'Teppat - tiruvila'* are common.

The Impact of Music & dance

The Great arts, music and dance seems to be a very common form of enjoyment or worship both in the Indus and Tamil Culture. A kind of drum seen hanging from the neck in a terracotta figure, a precursor of the modern *mridanga* with skins at either end noticed in two seals. Crude Stringed instrument, a prototype of modern the destruction v*ina* represented in some of the pictographs, a pair of castanets etc., seem to be the earliest musical instruments of India.

An exquisite little bronze figure of a dancing girl now preserved in the National museum, New Delhi, may be considered as a master piece. She is standing in a provocative posture with one arm resting on her hip while the another arm is simply suspended below. A series of heavy bangles cover her one arm from the shoulder down to the wrist. It has been suggested that this "dancing girl" is representative of a class of dancers an important feature of later Hindu culture. The figure of a dancer standing on his right leg while raising his left leg in front also is a noteworthy feature in the art of dancing, like the dance of Lord Nataraja of later Hinduism.

In the sangam literature, reference is made to a large number of bands of dancers called the *Kutar* and *Panar* (bards) with their female partners who were

popularly known as *Viraliyar.* They carried with them a number of musical instruments, like *mulavu, Akuli, pandil, kodu, Thumbu, Kulal, Thattai, Yellari, Padhalai* etc., We have a number of Arruppadai literatures like *Porunararruppadai, Perumpanarrup padai, Sirupanarruppadai, Kutharrarrup padai (Malaipadukadam)* etc., which speak a lot about these *kuthars.* So it is very clear that music and dance held a very high place in the culture of sangam period. The Sitthannavasal cave paintings, and the Thanjavur Big temple paintings of beautiful dance postures, dance *karanas* depicted in the Kailasanatha and Vaikunthaperumal temples at Kanchi, *Karanam* poses depicted in the Big temple of Thanjavur, the Sarangapani temple at Kumbakonam, and the Nataraja temple at Chidambaram etc., some decorative carvings of the dancers noticed in many temples in Tamilnadu all good examples. *Talicceripendugals,* the temple dancers, mentioned in a number of temple inscriptions prove beyond doubt that music and dance were very popular in the temples of Tamilnadu. Thus music and dance seems to have a continuity from the days of Harappan culture in the religious beliefs, religious practices, associated with the temple rituals, and in the public life of our society.

Conclusion

The Indus civilization which became fragmented into regional cultures, is thus having a strong impact on certain religious aspects of Tamil culture, as seen above. The cults of Muruga worship, the mother goddess, the tree worship, the great bath, Siva worship etc., became interwoven with each other as we notice them in the Tamil culture. The Neolithic people of Tamil Nadu might have had contact with the people of Indus civilization and this contact might have had certain impact in their religious beliefs, practices and other things that are associated with their ritual life. Certain resemblances in the graffiti symbols, pottery making techniques, pottery shapes, burial practices, tools and art objects found both at Harappan sites and the neoithic and megalithic cultures of Tamil Nadu, as it has been noted by many scholars, they might be definitely due to the infiltration of certain thoughts and ideas between both cultures due to certain contacts with them.

சிந்துவெளி நாகரிகத்தில் முந்திரி வாய்பாடு

கு. வெங்கடாசலம்

இன்று நடைமுறையில் இருந்து வரும் ''கிராம்'' எடை, புழக்கத்தில் வருவதற்கு முன்பு, ஆயிரத்து தொள்ளாயிரத்து ஐம்பத்தேழாம் ஆண்டு வரை ''பலம்'' என்ற மூல அளவைக் கொண்ட ''எடைமுறை'' இருந்து வந்தது. பலம், சேர், வீசை, மணங்கு என்ற ''பலத்தின்'' மடங்குகளான பெரிய நிறைகற்களும், ''பலத்தின்'' கூறுகளான காற்பலம், அரைப்பலம் போன்ற சிறிய எடைக்கற்களும் இருந்து வந்தன. பொன், மணி இவற்றை நிறுக்க, நெல், குன்றிமணி, பணவெடை, மாவெடை, வராகனெடை, கழஞ்சு என்ற நிறைகளும் இருந்தன.

இன்றைக்குச் சுமார் ஐயாயிரம் ஆண்டுகளுக்கு முன்பு, சிந்துநதிச் சமவெளியில் வாழ்ந்த மக்கள், சிறந்த வணிகர்களாகத் திகழ்ந்தனர். அந்நாளில், வணிகத்தின் 'பண்டமாற்று முறையே' (Barter) கையாளப்பட்டு வந்தது. வாணிகம் செய்யத் தேவையான அளவு, நிறை - இவற்றைக் கணக்கிடும் அனைத்துக் கல்வியையும், அம்மக்கள் பெற்றிருந்தனர். பேரெண், சிற்றெண் எனப்படும் எண் முறைகளையும், கணிதத்திற்கு அடிப்படைச் செயல்களான கூட்டல், கழித்தல், பெருக்கல், வகுத்தல் முதலியனவற்றையும் நன்கு அறிந்திருந்தனர். அவர்களிடம் புழக்கத்தில் இருந்த அளவும், நிறையும், எண்ணும் ஆகிய முறைகளே, இந்தியா முழுவதிலும், 1957 வரை சிற்சில மாற்றங்களுடன், வழக்கில் இருந்து வந்தன எனக் கருத இடமுண்டு.

சிந்துவெளி நகரங்களில் கருங்கல், பளிங்குகல் போன்ற பலவகைக் கற்களால் செய்யப்பட்ட நிறைக் கற்கள் மிகுதியாகக் கிடைத்துள்ளன. அவை அனைத்தும், வழவழப்புடனும், பளபளப்புடனும் காணப்படுகின்றன. அவை பலவகை வடிவங்களாலானவை. அவற்றில் ஒன்றிலேனும் எடையினைக் குறிக்கும் குறியீடுகளோ எண்களோ இல்லை.

சிந்துவெளி நகரங்களில் கிடைத்த ஏராளமான எடைக்கற்களை அறிஞர்கள், இன்று நடைமுறையில் இருந்துவரும் ''கிராம்'' நிறைக்கு ஒப்பிட்டு ஆய்ந்து, அவற்றின் வீதங்களை முறையே குறித்து வெளியிட்டுள்ளனர். அவை மிகச் சிறிய நிறையான 871 மில்லி கிராம் முதல், மிகப்பெரிய நிறையான 10,875 கிராம் வரை, பல்வேறு நிறைகளைக் காட்டும் எடைகளாகும். அவை முறையே இரண்டு பணவெடை முதல்,

ஒரு மணங்கு வரையிலான எடைகளைக் குறிக்கும் கற்களாகும். ஒரு பணவெடை என்பது 4 குன்றிமணி எடையாகும். ஒரு மணங்கு என்பது 1,02,400 குன்றிமணி எடையாகும். அவ்வெடைக்கற்களின் வீதங்கள் சிறிய அளவில் இரண்டின் அடுக்குகளாகவும், பெரியவை பத்தின் அடுக்குகளாகவும் காணப்படுகின்றன. அவைகள் யாவும் குன்றிமணியின் எடையை மூல அளவாகக் (Basic Unit) கொண்டுள்ளன. அறிஞர்கள், ஒரு குன்றிமணியின் சராசரி எடை 109 மில்லி கிராம் என்று மிகத் துல்லியமாகக் கணக்கிட்டு கூறியுள்ளனர். அவற்றை இத்துடன் இணைத்துள்ள அட்டவணையில் (Table) காண்க.

அவ்வெடைக் கற்களின், பின்ன வீத முறைகள், தமிழ்நாட்டில் தொன்று தொட்டு சமீப காலம் வரை வாய்பாடாக வழங்கி வந்த 'சிற்றிலக்க வாய்பாட்டின்' அடிப்படையில் அமைந்து காணப்படுகின்றன. 'சிற்றிலக்க வாய்பாடு' நாணயங்கள் புழக்கத்திற்கு வருவதற்கு முன்பும், அதற்குப் பின்பும் பண்டமாற்றுதலுக்காக அமைந்துள்ள கணித வாய்பாடாகும். (Dinomination al ratio in arithmetical progration) அதனை 'முந்திரி வாய்பாடு' எனவும் கூறுவர்.

தமிழில் எண்களைப் பேரிலக்கம், சிற்றிலக்கம் என இருவகையாகப் பிரித்துள்ளனர். பேரிலக்கம் என்பது, ஒன்று முதல் அதற்குமேல் குறித்த பேரெண்களைக் குறிக்கும்; சிற்றிலக்கம் என்பது ஒன்றிற்குக் கீழ் அமைந்துள்ள சிற்றெண்களாகும். சிற்றிலக்க வாய்பாடு, 'மேல்வாய்ச் சிற்றிலக்கம்', 'கீழ்வாய்ச் சிற்றிலக்கம்' என இரு வகைப்படும்.

மேல்வாய்ச் சிற்றிலக்கம், முந்திரி (1/320) என்ற பின்னத்தை (fraction) முதலாகக் கொண்டு, முக்காலே நான்குமா அரையே அரைக்காணி முந்திரி (319/320) என்ற பின்னம் ஈறாக உள்ள சிற்றெண்களை, முறையே வாய்பாடாக உணர்த்தும் வகையில் அமைந்துள்ளது.

கீழ்வாய்ச் சிற்றிலக்கம், கீழ் முந்திரி (1/1, 02, 400) என்ற பின்னத்தை முதலாகக் கொண்டு, முந்திரி (1/320) என்ற பின்னம் ஈறாக உள்ள சிற்றெண்கள், முறையே வாய்பாடாக உணர்த்தும் வகையில் அமைந்துள்ளது. மேலும், கீழ்வாய்ச் சிற்றிலக்கம், கீழ் முந்திரிக்குக் கீழுள்ள சிற்றெண்களையும் குறிக்கும். அவை இம்மி, அணு, மும்மி, குணம், சின்னம், சின்னம் முந்திரி என வகைப்படுத்தப்படும்.

தமிழில் எண்களைத் தமிழ் எழுத்துக்களைக் கொண்டே ''குறியீடு'' (symbol) இட்டு உணர்த்துவர். ''எட்டே கால் லக்ஷணமே'' (அவ) என்ற ஔவையார் பாடலை ஓர்க. ஈங்கு, எழுத்தே, எண் ஆதலையும் காண்க. சிற்றிலக்க வாய்பாட்டில் அமைப்பு முறையினையும் தமிழ்க் குறியீட்டு எண்களையும் கணக்கதிகாரம், ''கெட்டி எண்சுவடி'' போன்ற நூல்களில் காண்க.

சிந்து வெளியில் கிடைத்துள்ள எடைக்கற்கள், ஒரு மணங்கு, ஒரு துலாம், இரண்டு தடை, ஒரு தடை, ஒரு வீசை, இரண்டு சேர், ஐந்து பலம், நான்கு பலம், பதினாறு வராகனெடை, ஒரு பலம், எட்டு வராகனெடை, இரண்டு கஃசு, நான்கு வராகனெடை, ஒரு கஃசு, இரண்டு வராகனெடை, இரண்டு கழஞ்சு, ஒரு வராகனெடை, ஒரு கழஞ்சு, நான்கு பணவெடை, இரண்டு பணவெடை என்று சமீப காலம்வரை, இந்தியாவின் புழக்கத்தில் இருந்த நிறைகளுக்கு ஈடாகவும், ''அன்சியா'' என்று ரோமனியர் வழங்கிய எடைக்குச் சமமாகவும், ''சூசா'' நகரில் ''ஷேக்கல்'' என்று வழங்கிய எடைக்குச் சமமாகவும், கிரேக்கர்கள் பயன்படுத்திய ''சூடெட்'' என்ற எடைக்குச் சமமாகவும் உள்ள பலவகை எடைகளைக் காட்டும் நிறை கற்களாகும்.

சிந்துவெளியில் கிடைத்துள்ள சிறிய எடைக்கல் 871 (எண்ணூற்று எழுபத்து ஒன்று) மில்லி கிராம் நிறை, 8 குன்றிமணி எடைக்குச் சமமாக உள்ளது. ஒரு குன்றிமணி எடை 109 மில்லி கிராமாகும். அச்சிறிய எடையை ஒன்று எனக்கொண்டு, குன்றிமணி எடையை அதற்கு ஒப்பிட்டுப் பின்னத்தில் குறித்தால், அது மூல அளவில் எட்டில் ஒன்று அல்லது அரைக்கால் பங்கு என்று பெறப்படும். இம்முறையிலேயே, சிந்து வெளியில் கிடைத்துள்ள எல்லா எடைக் கற்களையும், குன்றிமணி எடைக்கு மாற்றினால், அந்நிறைகளில் பின்னளவு, சிற்றிலக்க வாய்பாடு முறையில் அமையும்; அஃதாவது கீழ்முந்திரி, கீழ் அரைமா, கீழ் அரைக்காணியே அரைமா, கீழ் அரைக்காணி, கீழ்க்காணி, கீழ் அரைமா, கீழ்வீசம், கீழ் - அரைக்கால், கீழ்நான்குமா, கீழ்க்கால், கீழ்அரையே அரைக்கால், முந்திரி, முந்திரியே கீழ்க்கால், அரைக்காணி, அரைக்கால் வீசம், காணி, கால் வீசம், அரைமா, அரைவீசம், ஒரு மா, வீசம், அரைக்கால் என அமையும்.

சிந்துவெளியில் கிடைத்த எடைக்கற்களில், சிறிய எடைக்கற்களின் வீதங்கள் இரண்டின் அடுக்காக அமைந்திருப்பதோடு அல்லாமல், அவற்றின் பெரிய அளவைகளின் எடையில், பத்தில் ஒன்றாகவும் காணப்படுகின்றது.

ரோமானியர்கள் வழங்கிய நிறைமுறை ''அன்சியா'' என்று வழங்கப் பட்டது. பத்து ''அன்சியா'' அல்லது 80 வராகனெடை, 2560 குன்றிமணி எடைக்குச் சமம். எண்பது (80) வராகனெடை, 8 பலத்திற்குச் சமம்; எட்டுபலம் என்பது ஒரு சேர் நிறையாகும். இவ்வெடை கல்லிற்குச் சமமான எடைக்கல், சிந்துவெளியில் கிடைத்துள்ளது. கோவையை அடுத்துள்ள போத்தனூரில் 1931ம் ஆண்டு 1-1/4 அல்சியா எடைக்குச் சமமான ரோமானியர் நாணயங்கள் 120 கிடைத்துள்ளன. இது தமிழ்நாட்டில் முன்பு வழக்கிலிருந்த பத்து வராகனெடை அல்லது ஒரு பலம் அல்லது 320 குன்றிமணி எடைக்குச் சமமாகும். மேலும் இந்த ரோமானிய நாணயங்கள் 1931ல் வழக்கிலிருந்த வெள்ளி ரூபாய் 35க்குச் சமம் என்று தமிழ் மூதறிஞர் கோவைக்கிழார்

கூறுகின்றார். மூன்றரை ரூபாய், ஒரு வராகனெடையாகும். முப்பத்தைந்து ரூபாய் எடை, ஒரு பலம் நிறையாகும். இதனால் சிந்துவெளி எடை அளவே, பிற்காலத்தில் நாணயங்கள் உற்பத்தி செய்யப்பட்டபொழுது, மூல அளவாகத் தொடர்ந்து பயன்படுத்தப்பட்டுள்ளது என்பது தெற்றெனப் புலனாகின்றது.

சிந்துவெளியில் இருபது பணவெடை அல்லது 80 குன்றிமணி அல்லது ஒரு கஃசு நிறைக்குச் சமமான எடைக்கல் சூசா நகரில் கிடைத்த எடைக்கல்லான 'ஷேக்கல்' என்ற அளவுக்குச் சமமாக உள்ளது.

எகிப்தியரின் நிறையான சூடெட் 12.96 கிராம் எடைக்குச் சமம். அது 120 குன்றிமணி எடைக்குச் சமம். அதில் 10ல் ஒன்றான 12 குன்றிமணியின் எடை, 1.296 கிராம். அது ''சூடெட்'' என்ற எடையில் 10ல் ஒன்றாகும். இவ்வெடைக்குச் சமமான கற்களும், சிந்துவெளியில் கிடைத்துள்ளன.

சிந்துவெளியில் சிறந்த முறையில் அமைந்த எடைக்கற்கள் கிடைத்திருப்பதோடு, 'லோத்தல்' என்ற இடத்தில் மிகவும் துல்லியமாக நிறுக்க உதவும் உலோகத் துண்டுகள், துளையிடப்பட்டு, நூலில் கோர்த்துக் கழுத்தில் கட்டித் தொங்கவிட்டுக் கொள்ளும் வகையில் அமைந்துள்ளன. அச்சிறிய நிறைகள், 50 மில்லி கிராம், 100 மில்லி கிராம் என்று 10ன் அடுக்குகளால் அமைந்துள்ளன. 50 மில்லி கிராம், 1/2 குன்றிமணி எடைக்குச் சமம். தமிழ்நாட்டில் 5 வெண் சிறுகடுகு, ஒரு சீரகம், 5 சீரகம், ஒரு நெல், 2 நெல், ஒரு பிளவு, 2 பிளவு ஒரு குன்றிமணி நிறை என்று பொன், மணி இவைகளை நிறுக்க உதவும் வாய்பாடு உண்டு. நூறு வெண் சிறுகடுகு, ஒரு குன்றிமணி எடையாகும். மேலே குறித்த எடைகள் யாவும், வெண் சிறுகடுகை அளவீடாகக் கொண்டுள்ளன.

சமீப காலம்வரை நில அளவைக் கணிக்க, 100குழி ஒரு மா, 400 குழி ஒரு காணி, 2000 குழி ஒரு வேலி என்ற அளவுமுறை, புழக்கத்தில் இருந்தது. இதே முறை, முற்காலத்தில் இருந்ததாகச் சங்க இலக்கியங்களிலிருந்து தெரியவருகின்றது. தங்கத் துகள்களை நிறுக்க உதவும் வாய்ப்பாடும், நிலத்தின் அளவைக் கணிக்க உதவும் வாய்பாடும் ஒன்றாக அமைந்துள்ளன. நாணயங்கள் புழக்கத்தில் இல்லாத அந்நாளில், தங்கத்தை நிறுக்கவும் நிலங்கள், வீட்டு மனைகள் ஆகியவைகளை வாங்கவும் அந்நிறைகள் பயன்பட்டிருக்கலாம். நிலங்களை அளந்து அவற்றின் பரப்பளவைக் கணக்கிட தமிழில் ''குழிமாற்று'' என்ற சிற்றிலக்க வாய்பாடு உண்டு.

''கா'' என்ற சொல் சிந்துவெளி எழுத்துக்களில் காணப்படுவதாகவும் அது நிறை அளவைக் குறிப்பதாகவும் அறிஞர்கள் கருதுகின்றனர். ''கா'' என்ற நிறைஅளவு 100 பலமாகும்.

சிந்துவெளியில் கிடைத்துள்ள எந்த ஓர் எடைக்கல்லிலும், அதன் எடையினையோ, அல்லது எண்ணையோ உணர்த்த எந்தவிதக் குறியீடும் இல்லை. இது வியக்கத்தக்கதாக உள்ளது. அம்மக்கள் எம்முறையில் விற்பனை செய்யும் தங்கள் பொருள்களின் எடைகளைப் பிறருக்கு உணர்த்தினர் என்பது தெரியவில்லை. அவ்வெடைக் கற்களைக் கடுகு, சீரகம், கொள், ஐயவி, நெல், குன்றிமணி, காணம், கஃசு, தொடி, பலம், மா, வரா, அந்தை என்பவனற்றுடன் ஒப்பிட்டு வழங்கியிருக்கலாம். அப்பொருள்களையே அளவு, நிறை இவற்றின் வாய்பாடுகளில், தமிழர்கள் குறிப்பிட்டு வழங்கினர் போலும்.

வணிகர்களிடையே எண்களை மறைவிடமாக வழங்கும் பலவித பரிபாஷைகள் உண்டு. இப்பழக்கம், எல்லாக் காலங்களிலும், எல்லா மக்களிடமும் இருந்து வந்திருக்கின்றது. இதுபோன்ற சிந்துவெளி மக்கள் ஏதோ ஒரு முறையில் எடைக்கற்களின் மதிப்பைக் குறிக்காமல், எடைகளைப் பிறருக்கு உணர்த்தி எடைக்கற்களை பிற நாடுகளுக்கும், உடன் எடுத்துச் சென்று, வாணிகம் செய்திருக்கின்றனர்.

ரிக் வேதம், அதர்வண வேதம், கௌடில்ய அர்த்த சாஸ்திரம் ஆகியவற்றில் அளவு, நிறை ஆகிய இவற்றின் பெயர்களும், அளவைகளும் ஆங்காங்கே குறிக்கப்பட்டிருப்பினும், பண்டமாற்றலுக்கு அடிப்படையான சிற்றிலக்க வாய்பாட்டினைப் பற்றிய குறிப்போ, இலக்கணமோ இருப்பதாகத் தெரியவில்லை. மேலும் அந்நூல்களில் கொடுக்கப்பட்டிருக்கும் அளவைகள், நிறைகள், யாவும் தமிழிலுள்ள ''சிற்றிலக்க வாய்பாட்டின்'' அடிப்படையிலேயே அமைந்து காணப்படுகின்றன. ''வேதகால இலக்கியங்களில் கணிதத்திற்கு நான்கு அடிப்படைச் செயல்களான கூட்டல், கழித்தல், பெருக்கல், வகுத்தல் என்பன எங்குமே சிறப்பாக பேசப்படவில்லை. ஏனெனில் அவை யாவும் சாதாரணமான செயல்களாதலால், ஒருவித விளக்கமுமின்றி ஏற்றுக் கொள்ளப்பட்டன'' என்று ''இந்திய விஞ்ஞான வரலாற்றுச் சுருக்கம்'' என்ற நூல் கூறுகின்றது.

ஒரு பலநிறை (320 குன்றிமணி)க்குச் சமமான எடைக்கற்கள், சிந்துவெளியில் கிடைத்துள்ளன. ஆனால் சிந்துவெளி நாகரிகக் காலத்திற்கு ஆயிரம் ஆண்டுகளுக்குப் பின்பு எழுதப்பட்ட வேதங்களில் ஒரு 'முஷ்டி' அல்லது 'ஒரு கைப்பிடி' நெல்லின் எடையே' மூல அளவாகக் குறிக்கப் பட்டுள்ளது. இது வியப்பாகவும், ஆராய்ச்சிக்குரியதாகவும் உள்ளது. வேதங்களுக்குப்பின் எழுந்த வடமொழி நூல்களில், கீழ்காணும் அளவை முறைகள் குறிக்கப்பட்டுள்ளன.

8 முஷ்டி (கைப்பிடி) நெல்	-	குஞ்சி
8 குஞ்சி (64 கைப்பிடி)	-	புஷ்கலா

4 புஷ்கலா (256 கைப்பிடி) - அதகா
4 அதகா (1024 கைப்பிடி) - துரோணா
8 துரோணா (8190 கைப்பிடி) - குல்யா

மூல அளவான பலம், 320 குன்றிமணி எடைக்குச் சமம் என்பது வேதங்களுக்குப்பின் எழுந்த வடமொழி நூல்களில் அருகியே காணப்படுகின்றது. வேதங்கள் முதல், புராணங்கள் ஈறாக உள்ள வடமொழி இலக்கியங்களில் பெரும்பாலான பகுதிகள் அக்காலத் திராவிடர்களின் நூல்களிலிருந்து (இன்று இறந்துவிட்டன) மொழி பெயர்க்கப்பட்டவை என்று ஹீராசுப் பாதிரியார் கூறுவதை இங்கு ஒப்பு நோக்குக.

தொல்காப்பியச் சூத்திரச் சான்றுகள்:

அளவுநிறை எண்ணுப் பெயர்கள் தம்மிற்புணருமாறு:
உயிரும் புள்ளியும் இறுதியாகி,
அளவும் நிறையும் எண்ணுக்கு சுட்டி,
உளவெனப் பட்ட எல்லாச் சொல்லும்,
தத்தங் கிளவி தம்மகப் பட்ட
முந்தை வருஉங் காலந்தோன்றின்,
ஒத்த தென்ப ஏயென் சாரிய (தொல்-எழுத்-164)

அரையென வருஉம் பால்வகை கிளவிக்குப் புரைவதன்றாற்
சாரியையியற்கை --- (தொல், எழுத், 165)

(எ.கா.) அரை வீசம், அரையே வீசம், கால் வீசம், காலே வீசம், ஒன்றரை, ஒன்றேகால் முதலியன.

இரண்டு முதல் ஒன்பது ஈறாக உள்ள எண்முன் ''மா'' என்னும் சொல்:

(எ.கா.) இருமா, மும்மா, நான்மா, ஐம்மா, அறுமா, எண்மா, ஒன்பதின் மா என முன்னர்க் கூரிய சூத்திரங்களின் விகாரப்படுத்தி முடிக்க, இனி உம்மையான் விகாரப்படுத்தாது, இரண்டுமா, மூன்றுமா, நான்குமா, ஐந்துமா, ஆறுமா, எட்டுமா, ஒன்பதுமா என முடிக்க. புள்ளி மயங்கியலுள் அளவு நிறையும் (எழு 389) என்றும் சூத்திரத்தால் நெடு முதல், குறுகி, உகரம் வந்து புணருமாறு கூறினார். ஆதலால், ஈண்டு எழுமா என முடிக்க; ஏழ்மாவென முடிதல் வழக்கன்று.

இரண்டு முதல் ஒன்பாவென்று எடுத்தோதினமையின் ஒன்றற்கு ஒருமாவென்றும், முடிவேயன்றி, ஒன்றுமாவென்றும் முடிவு இல்லையாயிற்று.

அளவு, நிறை, எண்களைப் பற்றின வாய்பாட்டிற்கு இலக்கணம் தொல்காப்பிய எழுத்ததிகாரத்தில் மிக விரிவாக எழுதப்பட்டிருக்கின்றது. (காண்க : ''தொல்காப்பியமும் கணித வாய்பாடு இலக்கணமும்'' கு. வெங்கடாசலம்.)

மக்களின் வாழ்க்கையில், பேசுவதற்கு மொழி (எழுத்து) அடிப்படையாக அமைந்துள்ளதுபோல், மக்களின் வாழ்க்கைக்குத் தேவையான பண்ட மாற்றலுக்கும், பொருள் ஈட்டுதலுக்கும், இன்ன பிறவற்றிற்கும், அடிப்படைத் தேவையான பல்வேறு வகையான கணித வாய்பாடுகள், பழங்கால மக்களிடையே வழக்கிலிருந்த காரணத்தினாலன்றோ, தொல்காப்பியர் விரிவான இலக்கணம் வகுத்துள்ளார். தமிழ்க் கணித முறையில் பேரெண், சிற்றெண், மேல்வாய்ச் சிற்றிலக்கம், கீழ்வாய்ச் சிற்றிலக்கம், நெல்லிலக்கம், குழிமாற்று முதலிய வாய்பாடுகள் உள்ளன.

வடகிழக்கு மாநிலங்களில் யாஷ்டி (1/320), ரேக் (1/80) பான் (1/20), கஹான் (1/320), சிகி (1/20) பிகா (1/20) புற (4/20) முதலிய பின்னங்கள், சமீப காலம்வரை வழக்கில் இருந்து வந்திருக்கின்றன. இவையாவும் சிற்றிலக்க வாய்பாட்டின் அடிப்படையிலேயே அமைந்திருப்பதால் 'சிற்றிலக்க வாய்பாடு' அங்கும் செல்வாக்குப் பெற்றிருக்கலாம்.

மலேய நாடுகளிலும், இம்மாதிரியான வாய்பாடு, வழக்கில் இருந்ததாக சட்டோபாத்தியாயா அவர்கள் குறிப்பிடுகிறார். தமிழ் அரசர்கள் ஆட்சிக் காலத்தில், மலேய தீபகற்பத்திற்கும், 'சிற்றிலக்கம்' பரவியிருக்கலாம்.

தொல்காப்பியர், நிறுத்தலளவையைப் பல இடங்களில் குறிப்பிட்டிருப்பினும், நிறைப்பெயராக 'கா' என்பதை மட்டுமே குறிக்கின்றார். அவர் காலத்தில் வேறு பல அளவு நிறைப் பெயர்களும் வழக்கில் இருந்திருக்கலாம் என தொல்காப்பியச் சூத்திரங்களிலிருந்து அறியலாம். அளவுப் பெயராக, பனை, பதக்கு, தூணி, உரி, நாழி இவைகளைக் குறிக்கின்றார்.

தொல்காப்பியத்தை அடுத்துச் சங்க காலத்திற்கு வரும்பொழுது கழஞ்சு, கா என்னும் நிறைப் பெயர்களும் கிடைக்கின்றன. திருக்குறளில் தொடி, கஃசு, குன்றி என்ற பெயர்கள் காணப்படுகின்றன. சிலப்பதிகாரம் கழஞ்சு என்னும் நிறைப் பெயரை மட்டும் குறித்துச் செல்கின்றது. மற்றும் முகத்தல், எண்ணல் அளவைகளும், சங்க இலக்கியத்தில் ஆங்காங்கே காணப்படுகின்றன.

''சிலப்பதிகாரம்'' நிறைகோல் துலாத்தர் பறைகட் பராரையர், அம்பண அளவையர் எங்கணும் திரிதர (14: 208 -209) என்று கூறுவதனால், பண்ட மாற்றுதலுக்கு, அடிப்படைத் தேவையான சிற்றிலக்க வாய்பாட்டினை முற்றும் உணர்ந்தவர்கள் அங்கு இருந்திருக்க வேண்டும் எனத் தோன்றுகின்றது.

தனிப்பாடல் குறிப்புகளால் இச்சிற்றிலக்க வாய்பாடு, தமிழ்நாட்டில் எத்தனை உயரிய இடத்தில் அமைந்து, சீரும் சிறப்பும் பெற்றிருந்தது என்பது சொல்லாமலே தோன்றும்.

எண்ணுப் பெயர்ச் சிலேடை வெண்பா - காளமேகப் புலவர்

முக்காலுக் கேமுன் முன்னரையில் வீழாமுன்
அக்கா லரைக்கால் கண் டஞ்சாமுன் - விக்கி
இருமாமுன் மாகாணிக் கேகாமுன் கச்சி
ஒருமாவின் கீழரையின் றோது.

பொருள்: முன்கால்3/4, அரை 1/2, கால் 1/4, அரைக்கால் 1/8, இருமா 1/10, மாகாணி 1/16, ஒருமா 1/20 எனப் பின்ன எண்கள், வரிசையாக அமைந்துள்ள நயம் இன்புறத்தக்கது.

அளவு - நிறைப் பெயர்களில் மொழி முதலாம் எழுத்துக்கள்:

"அளவிற்கும் நிறையிற்கும் மொழி முதலாகி
உளவெனப்பட்ட ஒன்பதிற் றெழுத்தே
அவையால்
கசதப என்றா, நமவ என்றா,
அகர உகரமொ டவையென மொழிப" (தொல்.எழுத். 170)

பொருள்: அளவுப் பெயர்க்கும், நிறைப் பெயர்க்கும் மொழிக்கு முதலாயுள்ளவென்று கூறப்பட்டன. ஒன்பது எழுத்துக்கள்: அவ்வெழுத்துக்கள்தாங் சகதபக்களும், நமவக்களும், அகலமும் உயரமுமாகிய அவையென்று கூறுவர், புலவர்.

தொல்காப்பியர் காலத்திற்கு முன்பு இந்தியாவில் எழுந்த எந்தவொரு நூலிலேயும் அளவு, நிறை, எண் இவற்றிற்கு இவ்வளவு விரிவாக இலக்கணம் வகுக்கப்படவில்லை என்றே தோன்றுகின்றது.

சிந்துவெளியில் இன்று கிடைத்துள்ள சிறந்த முறையில் அமைந்திருந்த நிறைக் கற்களும், அவற்றின் வீத முறைகளும் சமீப காலம்வரை வழக்கில் இருந்த சிற்றிலக்க வாய்பாட்டின் இலக்கணத்திற்கு உகந்த வகையில் அமைந்திருக்கின்றன. சிற்றிலக்க வாய்பாடு, அந்நாளில் வாணிகத்திற்கு இன்றியமையாத ஒன்று.

சிற்றிலக்க வாய்பாடு, தொன்றுதொட்டு தமிழகத்திலேயே பிறந்து வளர்ந்து, இன்றுவரை அழிந்துவிடாமல், தமிழ்மொழிபோல் வாழ்ந்து வருகின்றது. சிந்து முதல் மற்ற இடங்களுக்கும் சென்று வாழ்ந்தும் வருகின்றது. இதனால் அந்நாளில் சிந்துவரை வாழ்ந்தவர் தமிழரே எனக் கொள்ளல் மிகையாகாது.

References

1. *Mohenjadaro and the Indus civilization* (Official Report), By Sir John Marshall.
2. Indus cities : Planning for perfection By S.R. Rao, *Science Today Vol 16 No 6*, June 1982.

அட்டவணை

சிந்துவெளியில் கிடைத்துள்ள எடைக் கற்களைக் குன்றிமணிகளில் எடைகளுடனும், தமிழ்நாட்டில் வழக்கில் இருந்த எடைகளுடனும் மற்றும் பிறநாட்டு எடைகளுடனும், சிற்றிலக்க வாய்ப்பாட்டுடனும் ஒப்பிட்டுக் கீழே காட்டப்பட்டுள்ளது.

1. சிந்துவெளி எடைகள் 2. கிராம் 3. எடைகளின் விகிதங்களின் குன்றிமணி எண்ணிக்கை 4. தமிழ்நாட்டில் வழக்கில் இருந்த எடைக் கற்கள் 5. குன்றிமணி சிந்துவெளி எடை விகிதம் 6. சிற்றிலக்க பின்னம் 7. சிற்றிலக்கத்தின் பெயர் 8. தமிழ்க் குறியீடுகள் 9. ரோமானியர் எடை அன்சியா 10. பாபிலோனியர் எடை ஷேக்கன்

1	2	3	4	5	6	7	8	9	10
-	-	1	குன்றிமணி எடை	1	1	ஒன்று	க		
-	-	2	குன்றிமணி எடை	1 : 2	1/2	அரை	?(இ)		
-	-	4	ஒரு பணவெடை	1 : 4	1/4	கால்	வ		
0.871	1	8	இரண்டு பணவெடை	1:8	1/8	அரைக்கால்	[illegible]		
1.770	2	16	நான்கு பணவெடை	1 : 15	1/16	வீசம்	பீ	1/16	1/4
2.285	21/2	20	ஒரு கழஞ்சு	1 : 20	1/20	ஒரு மா	ப		
3.434	4	32	ஒரு வராகனெடை	1 : 32	1/32	அரை வீசம்	[illegible]	1/8	1/2
4.337	5	40	இரண்டு கழஞ்சு	1 : 40	1/40	அரைமா	[illegible]		
6.829	8	64	இரண்டு வராகனெடை	1 : 64	1/64	கால்வீசம்	[illegible]	1/4	1
8.575	10	80	ஒரு கஃசு	1 : 80	1/80	காணி	[illegible]		
13.731	16	128	நான்கு வராகனெடை	1 : 128	1/128	அரைக்கால்வீசம்	[illegible]	1/2	2

13.165	20	160	இரண்டு கஃசு	1:160	1/160	அரைக்காணி	ஏ
27.405	32	256	எட்டு வராகனெடை	1:256	1/256	முந்திரியே கீழ்கால்	உதகீவ
33.050	40	320	ஒரு பலம்	1:320	1/320	முந்திரி	உஞ
54.359	64	512	பதினாறு வராகனெடை	1:512	1/512	கீழ்அரையே அரைக்கால்	கீஉவரு
136.020	160	1280	நான்கு பலம்	1:1280	1/1280	கீழ்கால்	கீவ
174.500	200	1600	ஐந்து பலம்	1:1600	1/1600	கீழ் நான்மா	கீஙு
271.330	320	2560	ஒரு சேர்	1:2560	1/2560	கீழ் அரைக்கால்	கீஉரு
546.700	640	5120	இரண்டு சேர்	1:5120	1/5120	கீழ்விசம்	கீபுழ
1417.500	1600	12800	ஒரு வீசை	1:12800	1/12800	கீழ்அரைமா	கீஙு
2701.400	3200	25600	ஒரு தடை	1:25600	1/25600	கீழ் காணி	கீழ
5556.000	6400	51200	இரண்டுதடை	1:51200	1/51200	கீழ் அரைக்காணி	கீஸ
6603.000	8000	64000	ஒரு துலாம்	1:64000	1/64000	கீழ் அரைக் காணியே அரைமா	கீஸ்ஙு
10875.000	12800	102400	ஒரு மணங்கு	1:102400	1/102400	கீழ் முந்திரி	கீஉந

சிந்துவெளியில் கிடைத்த எடைக்கற்களில், சிறிய எடைக்கற்களின் விகிதங்கள் இரண்டின் அடுக்காக அமைந்திருப்பதோடு அல்லாமல் அவற்றின் பெரிய அளவைகளின் எடையில் பத்தில் ஒன்றாகவும் இருப்பதை காண்க.

சிந்துவெளி அகழாய்வும் சங்க இலக்கியப் பதிவும்

முனைவர் க.ப. அறவாணன்

சிந்துவெளி அகழாய்வில் கண்டறியப்பெற்ற ஒரு செய்தி, தமிழ்ச் சமுதாயத்துடனும், தமிழ்ச்சமுதாய வரலாற்றின் ஆதி ஆவணமாக விளங்கும் சங்க இலக்கியப் பதிவுடனும் கொண்டிருக்கும் சங்கிலித் தொடர்பை எடுத்துக்காட்டுவதே இக்கட்டுரையின் நோக்கம்.

சிந்துவெளியில் கிடைத்துள்ள செய்திகளில் ஒன்று :

இங்குக் கிடைத்துள்ள உடல் எச்சங்கள் இறந்தவரை புதைக்கும் பழக்கம் பின்பற்றப் பட்டது என்பதைக் காட்டுகின்றன. உடலங்கள் செங்கற்களால் கட்டப்பட்ட புதை குழியில் குப்புறக் கவிழ்த்து அடக்கம் செய்யப் பெற்றுள்ளன. ஈதன்றி எரிக்கப்பட்டவர்களின் சாம்பலைச் சிறிய சாடியில் வைத்து, இரண்டு மூன்று சாடிகளைப் பெரிய பாத்திரத்தில் வைத்து, உணவு, உடை முதலானவற்றை உடன் வைத்துப் புதைக்கும் பழக்கமும் இருந்துள்ளது. (டி.என். சேசையங்கார். திராவிட இந்தியா. தமிழாக்கம், க.ப. அறவாணன், பக்கம். 51)

இறந்தோரை அடக்கம் செய்தல் பற்றிப் பின்வரும் குறிப்பு மணிமேகலை, சக்கரவாளக் கோட்டம் உரைத்த காதையில் விரிவாக இடம் பெற்றுள்ளது (காதை.6, அடிகள்.65,84). இக்கோட்டத்தின் இன்னொரு பெயரே சுடுகாட்டுக் கோட்டம் என்பதாகும் (காதை.6, அ.30). இப்பகுதியில் இடம் பெற்றுள்ள முதன்மையான பகுதி வருமாறு.

ஈமப் பந்தரும் யாங்கணும் பரந்து
சுடுவோ ரிடுவோர் தொடுகுழிப் படுப்போர்
தாழ்வயி னடைப்போர் தாழியிற் கவிப்போர்
இரவும் பகலும் இளிவுடன் றரியாது
வருவோர் பெயர்வோர் மாறாச் சும்மையும்

பிணங்களைச் சுடுவோரும், சுடாமல்அப்படியே எறிந்துவிட்டுப் போவோரும், குழியைத் தோண்டி அதன் உள்ளே இடுவோரும், பள்ளமாகிய இடங்களில் அடைத்து வைப்போரும், தாழியினால் கவிழ்ப்போரும், இரவும் பகலும் அருவருப்புடன்

தங்காமல் வருவோரும், போவோருமாக அவர்கள் வழிஉண்டாகும் நீங்காத ஒலியும் என்பது பா அடிகள் உணர்த்தும் கருத்து.

இப்பகுதியின் வழி, சோழநாட்டுத் தலைநகராகிய பூம்புகாரில் இறந்தோரை அடக்கம் செய்யும் பல்வேறு முறைகள் புலப்படுகின்றன.

மணிமேகலையைவிட, மிகப் பழையதாகிய புறநானூற்றுத் தொகுப்பில் பிணங்கள் அடக்கம் செய்யப்பெறும் தாழிபற்றிய நான்கு குறிப்புகள் இடம் பெற்றுள்ளன. அவை வருமாறு,

1. ஈமத்தாழி பற்றிய முதற்குறிப்பு: புறநானூறு - 228

ஐயூர் முடவனார் எனும் புலவர், சோழன் குளமுற்றத்துத் துஞ்சிய கிள்ளி வளவனை அவன் இறந்தபோது அவனைத் தாழியுள் அடக்கம் செய்தல் பற்றி வருந்தியும், வியந்தும் பாடிய பாடலாகும். வளவன், மிக வலுவான பாரிய உடல் வாய்ந்தவன். அவனை அடக்கம் செய்ய ஒரு தாழியுள் முடியுமா? அத்துணைப் பெரிய தாழியைக் குயவனால் செய்ய இயலுமா? என்று குயவனை நோக்கிப் பாடியதாக பாடல்அமைந்துள்ளது.

கலம்செய் கோவே, கலம்செய் கோவே
....
சேண்விளங்கு சிறப்பிற் செம்பியர் மருகன்
கொடிநுடங்கு யானை நெடுமா வளவன்
தேவ ருலக மெய்தின னாதலின்
அன்னோற் கவிக்குங் கண்ணகன் றாழி
வனைதல் வேட்டனை யாயி னெனையது உம்
இருநிலத் திகிரியாய் பெருமலை
மண்ணா வனைத லொல்லுமோ நினக்கே. (புறநானூறு. 228: 9-5)

ஒருவர் இறந்தபின்பே குயவரிடம் தாழிசெய்யப் பணித்ததுபோல இப்பாடல் அமைந்துள்ளது. இதிலிருந்து, இறந்த உடலத்தைக் கவிழ்த்துமூடப் பயன்படுத்தப்பெற்ற மண்தாழி, பச்சைமண்ணால் செய்யப்பெற்றது; சுடப்பெறாதது என்று தோற்றுகிறது. "'மண்ணா வனைதல் ஒல்லுமோ நினக்கே?'' என முடியும் பாடல் அடி இக்கருத்தைத் தோற்றுவிக்கிறது. இன்றும், சிற்றூர்களில் பிணத்தை அடக்கம் செய்யும் போது புதைக்க அல்லது கொள்ளி வைக்க உரிமை உடையவர் தோளில் சுடப்படாத மண்பானை சுமக்கச் செய்யப்பெற்றுப் பிணத்தைச் சுற்றி மும்முறை வலம்வரும் முறை இருக்கிறது (சீர்காழி வட்டம், தஞ்சை மாவட்டம்).

2. ஈமத்தாழி பற்றிய இரண்டாம் குறிப்பு : புறநானூறு - 238.

வெளிமான் எனும் அரசன், இறந்த அவலம் தாளாமல் பெருஞ்சித்திரனார் பாடும் பாடல் இது. இப்பாடலின் முதன்மையான அடிகள் வருமாறு.

கவிசெந் தாழிக் குவிபுறத் துஇருந்த
செவிசெஞ் சேவலும் பொகுவலும் வெருவர
வாய்வன் காக்கையும் கூகையும் கூடிப்
பேஎய் ஆயமொடு பெட்டாங்கு வழங்கும்
காடுமுன் னினனே கள்கா முறுநன்;

3. ஈமத்தாழி பற்றிய மூன்றாம் குறிப்பு: புறநானூறு - 256

தன் அன்புக்குரிய தலைவன், இறந்துபட அவனோடு இறக்க விரும்பும் நெருக்கமான நட்பிற்கு உரியவர், இறந்தவரை அடக்கம் செய்யும் மண் தாழியைச் செய்யும் குயவரைப் பார்த்துப் பாடியதாக அமைந்துள்ள பாடல். பாடலாசிரியர் பெயர் தெரியவில்லை. தலைவனை அடக்கம் செய்யும் அதே தாழியில் தன்னையும் அடக்கம் செய்ய வாய்ப்பாக அகன்ற பெரிய மண்தாழியைச் செய்யுமாறு குயவனை அந்நண்பர் சோகம் பொறுக்காமல் வேண்டுகிறார். அவ்வாறு வேண்டும் பாடல் வருமாறு.

கலம்செய் கோவே கலம்செய் கோவே
அச்சுடைச் சாகாட்டு ஆரம் பொருந்திய
சிறுவெண் பல்லி போலத் தன்னொடு
சுரம்பல வந்த எமக்கும் அருளி
வியன்மலர் அகன்பொழில் ஈமத் தாழி
அகலிதாக வனைமோ
நனந்தலை மூதூர்க் கலம்செய் கோவே.

இப்பாடல் வழி, குயவர், ஒருவருக்கு மேற்பட்டவரையும் சேர்த்து அடக்கம் செய்யும் மண் தாழியைச் செய்யக்கூடும் என்று தெரிகிறது. இப்பாடலில் ஈமத்தாழி என்றே குறிப்பு இடம் பெற்றுள்ளது. இப்பாடலுக்கு உரை எழுதும் அவ்வை சு. துரைசாமி பிள்ளை, தனிமகள் புலம்பிய முதுபாலை எனும் துறையின் கீழ், தன் காதல் கணவனுடன் பாலை நிலத்தைக் கடந்துகொண்டிருக்கையில், அவன் இறந்துபட அத்துயரம் தாளாது கணவனுடையே சேர்ந்து ஒரே மண் தாழியில் அடக்கமாகி இறந்துபட விரும்புவதாக விளக்குவர்.

இதிலிருந்து கணவனும், மனைவியுமாக ஒரே ஈமத்தாழியில் அடக்கம் செய்யப்படுதலும், உண்டு என்று கருதலாம்.

ஈமத்தாழி பற்றிய நான்காம் குறிப்பு: புறநானூறு - 364

கூகைக்கோழியார் எனும் புலவர், இடுகாட்டை வருணிப்பதாக அமைந்துள்ள பாடல் இது. மன்னனும் வள்ளலுமாக இருக்கும் அரசன், எளியோர்க்குத் தரும் இனிய உணவையும், இன்னபிறவற்றையும் பெற்று நுகரும் இனிய வாழ்வு தாழியில் இடுகாட்டில் புதைந்த பிறகு, பெறுதல் அரிது என்று குறிப்பிடுகிறார்.

முதுமரப் பொத்திற் கதுமென இயம்பும்
கூகைக் கோழி ஆனாத்
தாழிய பெருங்கா டெய்திய ஞான்றே. *(அடி: 11-13)*

இந்நான்கு சான்றுகளும், இறந்தோரை மண்ணால் செய்யப்பெற்ற தாழியில் வைத்து, மண்ணில் புதைத்து அடக்கம் செய்வதைக் காட்டுகின்றன. ஒரே மண் தாழியில் இருவரும் அடக்கம் செய்யப்பெறலாம் என்ற கருத்தையும் இப்பாக்கள் வழி நாம் அறிந்துகொள்ளலாம்.

அறிய வேண்டிய முதன்மையான குறிப்பு:

இறந்தோரை இக்காலத்துப் புதைப்பதுபோன்று விண்பார்க்கப் புதைப்பதில்லை என்று தெரிகிறது. இச்செய்தி, கவி செந்தாழி (புறம். 238) எனும் தொடரால் தெளிவாகிறது. புறநானூற்றுப் பழைய உரை, "பிணமிட்டுப் புதைக்கப்பட்ட கவிக்கப் பட்ட செய்ய தாழி" என்ற உரையால் ஓரளவு புலனாகிறது. தாழி கவிக்கப்பட்டிருந்ததுடன், பிணமும் கவிழ்க்கப்பட்டுப் புதைக்கப்பட்டிருத்தல் வேண்டும். இச்செய்தி, வேறு இரண்டு குறிப்புகளாலும் உறுதியாகிறது.

பிணத்தை நிமிர்த்தி வைக்காமல், கவிழ்த்து வைத்துப் புதைக்கும் பழக்கம் தென்னிந்தியத் திராவிடப் பழங்குடி மக்களிடம் இருந்ததை எட்கர் தர்ஸ்டன் தான் எழுதிய எத்னோ கிராபிக்ஸ் நோட்ஸ். ப.166 எனும் நூலில் குறிப்பிடுகிறார்.

ஏனாதி என்னும் தெலுங்கு பேசும் காட்டில் வாழும் பழங்குடி மக்கள், இறந்தவர் உடலைத் துணியில் சுற்றி, முகம் தரையை நோக்கிப் பார்க்குமாறு கவிழ்த்துப் புதைப்பதாகக் குறித்துள்ளார்.

இது இன்னொரு செய்தியாலும் உறுதியாகிறது. திருநெல்வேலி மாவட்ட ஆதிச்சநல்லூரில் முதுமக்கள் தாழிகள் கண்டறியப் பட்டன (1902-03). அவற்றைக் கண்டுபிடித்த அலெக்சாண்டர் ரியா (Alexander Ria) இந்தியத் தொல்பொருள் துறை அறிக்கையில் (Archeological Survery of India Report - 1902) குறிப்பிடுவது வருமாறு :

இங்குக் கண்டெடுக்கப்பட்ட சடலங்கள், தலைகுப்புற கவிழ்க்கப்பெற்றே புதைக்கப் பெற்றன என்று எழுதுகிறார். ஆதிச்சநல்லூரில் அமைந்துள்ள முதுமக்கள் தாழி மூறை, கிரீத்திலும் (Crete), சைப்பிரசிலும் சடலத்தைக் குப்புறக் கவிழ்த்து

அடக்கம் செய்யும் முறையோடும் சார்கோபாகியில் அலங்கரிக்கப்பட்ட தங்கப் பேழையில் அடக்கம் செய்யும் முறையோடும் முற்றும் ஒத்தது. ஆதிச்சநல்லூர், பெரும்பேர், கோயம்புத்தூர் முதலான தென்னிந்திய இடங்களில் கண்டறியப் பெற்றுள்ள முதுமக்கள் தாழி முறையுடன் முற்றுமாக ஒத்துள்ளன. இவை திராவிடர்களின் வாழ்விடம் என்று கருதுகிறார் எம். லாப்பிக் (Lapicque. M). சிந்துவெளியில் கிடைத்த சான்றுகளும், ஆதிச்சநல்லூரில் கிடைத்த சான்றுகளும் ஒன்றுபோலவே உள்ளன. மண்ணால் ஆன பிணப்பெட்டியில் பிணத்தைக் கவிழ்த்துப் புதைப்பது, பிணத்துடன் குடிநீர், உடுத்துவன, அவர்கள் பயன்படுத்திய கருவிகள் ஆகியவற்றை அடுத்த உலக வாழ்வின்போது பயன்படுத்த வைப்பது ஆகியனவும் சிந்துவெளிக்கும், ஆதிச்சநல்லூருக்கும் பொருந்தும் வழக்கங்களாகும் (டி.என். சேசையங்கார். திராவிட இந்தியா. ப. 62).

ஆக, சிந்துவெளி அகழ்வாய்வில் பிணங்கள் கவிழ்த்துப் புதைக்கப் பட்டதைப்போலக், கவிழ்த்துப் புதைக்கும் பழக்கமே பழைய தமிழகத்தில் இருந்தது என்பதையும், அதனையே கவி செந்தாழி என்னும் சங்க இலக்கியக் குறிப்பு உணர்த்துகிறது என்பதையும், இப்பழக்கம் திராவிடப் பழங்குடி மக்களிடமும் இருந்தது என்பதையும், ஆதிச்சநல்லூர் முதுமக்கள் தாழிப் பிணங்களும் இவ்வாறே புதைக்கப்பட்டிருத்தல் வேண்டும் என்பதையும் அறிந்துகொள்கிறோம்.

எனவே, சிந்துவெளிப் பண்பாட்டிற்கும், பழைய தமிழ்ச்சமூதாயப் பண்பாட்டிற்கும் சங்கிலித் தொடர்பு உண்டு என்பதைப் பிணம் கவிழ்த்துப் புதைக்கப்பட்டிருத்தலில் இருந்தும் உறுதிசெய்து கொள்ளலாம்.

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தாய்த்தெய்வ வழிபாடு - சிந்து முதல் தமிழகம் வரை

இரா. ஜெகதீசன்

உலகில் உள்ள பண்டையக் கால நாகரிகங்களில் ஒன்றான சிந்து சமவெளி நாகரிகம் திராவிடர் நாகரிகம் என்றும், ஆரியர் நாகரிகம் என்றும், இவ்விரண்டிற்கும் அப்பாற்பட்ட நாகரிகம் என்றும் கருத்து வேறுபாடுகள் உள்ள சூழ்நிலையில் சமயம் சார்ந்த தொல்லியல் சான்றுகளை அடிப்படையாகக் கொண்டு இந்நாகரிகம் பற்றி ஆய்வதே இக்கட்டுரையின் நோக்கமாகும்.

சிந்துவெளி நாகரிகச் சின்னங்களான ஹரப்பா, மொகஞ்சதரோ, சானுதரோ, கோட்டிஜி, லோத்தல், பனவலி முதலிய இடங்களிலிருந்து பலவகையான தாய்த்தெய்வ சுடுமண் பொம்மைகள் கிடைத்துள்ளன. இவற்றில் ஹரப்பா, மொகஞ்சதரோவில் கிடைத்துள்ளவைகள் ஒரே மாதிரியான உருவங்களில் தலைப் பகுதிகள் மலர்கள் அல்லது விசிறி போன்று காட்டப்பட்டுள்ளன. பிற பகுதியில் கிடைத்துள்ள பொம்மைகள் ஒவ்வொன்றும் இவற்றிலிருந்து மாறுபட்டுள்ளன. மத்தியப் பிரதேசத்தில் பல இடங்களில் தாய்த்தெய்வ உருவங்கள் கிடைத்துள்ளன. இவற்றில் 'கயத்தா' என்ற இடத்தில் தந்தச் சிற்பமும் (கி.மு. 1700-1300), 'ஏரானிலும்' (கி.மு.7), 'ஆசாத் நகரிலும் (இந்தூர்)' (கி.மு.-1 கி.பி.2) சுடுமண் பொம்மைகளும் கிடைத்துள்ளன. 'நின்னூர்' என்ற இடத்தில் (கி.பி.3-6) கற்சிலை ஒன்றும் கிடைத்துள்ளது.

மகாராஷ்டிரத்தில் 'இனம்கான்' என்ற இடத்தில் கி.மு.1000- 700ஆம் ஆண்டைச் சேர்ந்த சுடுமண் பொம்மை ஒன்று கிடைத்துள்ளது. ஆந்திரப்பிரதேசம் நாகார்சுன கொண்டாவில் ஹரப்பாவில் கிடைத்துள்ளது போன்ற குழந்தையுடன் கூடிய தாய் உருவம் ஒன்று கிடைத்துள்ளது. இவ்வுருவம் வரலாற்றுக் காலத்தைச் சேர்ந்ததாகக் கருதப்படுகின்றது.

தமிழகத்தில் செங்கத்திற்கு அருகில் பெருங்கற்சின்னம் ஒன்றில் தாய்த் தெய்வச் சின்னம் ஒன்றும், ஆதிச்சநல்லூரில் தாய்த்தெய்வ உருவத்தை ஒத்த கி.மு. 7ஆம் நூற்றாண்டைச் சேர்ந்த வெண்கலச் சிலை ஒன்றும் கிடைத்துள்ளது.

சிந்து வெளியில் சுடுமண் உருவங்கள் தவிர பல முத்திரைகளிலும் தாய்த் தெய்வங்கள் காட்டப்பட்டுள்ளன. இவற்றில் ஹரப்பாவில் மரத்தின் அடியில் தவம்

செய்வது போன்றும்,மொகஞ்சதரோவில் மரத்தின் மேல் நிற்பது போன்றும், காலிபங்கனில் மரத்திற்கு முன் நிற்பது போன்றும் காட்டப்பட்டுள்ளன. சிந்துவெளி நாகரிக காலத்திற்குப் பின்னால் ஏற்பட்ட பௌத்த சமயத்தில் பெண் தெய்வங்கள் மரத்தில் வாழ்வதாக பல பௌத்த சாதகக் கதைகளும், ''பார்குத்'', 'புத்தகயா', 'சாஞ்சி' முதலிய இடங்களில் உள்ள ஸ்தூபங்களில் இயக்கிகள் மரக்கிளைகளில் தொங்குவது போன்றும் காட்டப்பட்டுள்ளன. கி.மு. 3ஆம் நூற்றாண்டைச் சேர்ந்த ''பாசா'' என்ற இடத்தில் கிடைத்த இயக்கி உருவம் தாய்த் தெய்வப் பண்புகளுடன் காணப்படுவதாகக் குறிப்பிடப்பட்டுள்ளது. தமிழகத்தில் ஆதிச்சநல்லூரில் கி.மு. 700-500 ஆண்டைச் சேர்ந்த மரத்துடன் தாய்த்தெய்வவுருவம் பொறித்த ஓடு ஒன்று கிடைத்துள்ளது. இன்றும் தமிழகத்தில் வேப்ப மரம் அம்மனாக வழிபடப்பட்டு வருகின்றது. தமிழர்களின் தாய்த்தெய்வமாகக் கொற்றவை கருதப்படுகின்றது. இவளது ஊர்தி மான் என்பதாகும். ஆதிச்சநல்லூரில் கிடைத்த ஓட்டில் மானும் காட்டப்பட்டுள்ளது. மறையூர் குகை ஓவியத்திலும், பண்டைய தமிழ் இலக்கியங் களிலும், ஓணம்பாக்கம், பெரிய வெண்மணி முதலிய இடங்களில் காணப்படுகின்ற பல்லவர் கால சிற்பங்களிலும் மான் ஊர்தியாக காட்டப்பட்டுள்ளது. வட இந்திய நாணயங்களில் ஒன்றான கி.பி.1-2ஆம் நூற்றாண்டைச் சேர்ந்த 'குனின்டா' காசுகளில் மானுடன் தாய்த்தெய்வம் காட்டப்பட்டுள்ளது குறிப்பிடத்தக்கதாகும்.

இதே போன்று தாய்த்தெய்வத்தைத் தாய்த்தன்மை உடையவள் என்பதற்காக பெரிய வயிற்றையும், பருத்த மார்பையும் உடையவளாகக் காட்டுவது மரபாகும். இவளை ஜேஷ்டாதேவி என்று குறிப்பிடுவர். தமிழகத்தில் இவள் சேட்டை, மூதேவி, மூத்தோள், பழையோள் என்று குறிப்பிடப்படுகின்றாள். சிந்துவெளி நாகரிகச் சின்னங்களில் இதே போன்று அமைப்புடைய சுடுமண் பொம்மைகள் பல கிடைத்துள்ளன.

மத்தியப்பிரதேசத்திலும், மகாராஷ்டிரத்திலும் இவ்வுருவ அமைப்புடைய பண்டையக்கால ஓவியங்கள் பிம்பெட்காவிலும், பொல்காய் மலைப் பகுதியிலும் கிடைத்துள்ளன. தமிழகத்தில் தர்மபுரிக்கு அருகில் மகாராஜாக்கடை என்ற இடத்தில் பெருங்கற் சின்னம் ஒன்றில் இதே போன்ற ஓவியம் ஒன்றும் தீட்டப்பட்டுள்ளது. மணிமேகலை, பூம்புகாரில் இருந்த சம்பாபதி என்ற பௌத்த மதக் கோயில் மூத்த தெய்வ கோயிலாகக் குறிப்பிடுகின்றது. கி.பி.8ஆம் நூற்றாண்டைச் சேர்ந்த பல்லவர், பாண்டியர் காலக் கோயில்களில் இவளுக்குச் சன்னதிகள் அமைக்கப்பட்டுள்ளன.

மொகஞ்சதரோவில் குளம் ஒன்று அகழாய்வில் கண்டறியப்பட்டுள்ளது. இந்நகர் நதிக்கரையில் அமைந்திருந்த போதும் குளியலுக்காக இக்குளம் அமைக்கப் பட்டுள்ளது, நீராடல் சடங்கிற்காக எனக்கருதப்படுகின்றது. ஹரப்பாவில் சிறிய தொட்டியில் ஒரு பெண் நீராடுவது போன்ற சுடுமண் பொம்மை ஒன்று கிடைத்

துள்ளது. எனவே சிந்துவெளி நாகரிகத்தில் நீராடல் என்பது சிறப்பு பெற்றிருந்தது. எனக் கருதலாம். நீராடல் என்பது பாவை (தாய்) வழிபாட்டுடன் தொடர்புடையதாகும்.

பௌத்த ஜாதகக் கதையில் வைசாலியில் உள்ள குளத்தில் நீராடுவது புண்ணியமாகக் கருதப்பட்டுள்ளதாகக் குறிப்பிடுகின்றது. தமிழகத்தில் குளத்தில் நீராடல் முக்கிய சடங்காகக் கருதப்படுகின்றது. சங்க இலக்கியமான பட்டினப் பாலை (38) குளக்கரையில் அமைந்திருந்த கோயில் பற்றியும் பெரும்பாணாற்றுப்படை (294) பொய்கையின் அமைப்பு பற்றியும், அதன் நீரின் புனிதத்தன்மை பற்றியும் குறிப்பிடுகின்றது. சிலப்பதிகாரம் புகார் நகரில் நடைபெற்ற குள நீரணி விழா பற்றியும் குறிப்பிடுகின்றது. கி.பி.7ஆம் நூற்றாண்டைச் சேர்ந்த சித்தன்ன வாசல் ஓவியத்தில் குளம் ஓவியமாகக் தீட்டப்பட்டுள்ளது. கும்பகோணத்தில் உள்ள மகாமகக் குளம் பெண் தெய்வத் தொடர்புள்ளதாகவும், இவ்விடம் தாய்த்தெய்வ வழிபாட்டிடமாகவும் ஆராயப்பட்டுள்ளது. தமிழகத்தில் பெரும்பான்மையான பெருந்தெய்வ கோயில்கள் தெப்பக்குளத்துடன் அமைந்துள்ளது, தமிழர்களின் குளநீராடல் தொடர்புடைய தாகும். இவை தவிர தாய்த்தெய்வ சின்னங்களான மகிஷாசுரமர்த்தினி, ஏழுதாயர், பெற்ற நாச்சியார் உருவங்கள் சிந்துவெளி முதல், தமிழகம் வரை பரவியிருப்பதை தொல்லியல் சான்றுகள் பல உறுதி செய்கின்றன.

மேற்கண்ட தொல்லியல் சான்றுகள் தாய்த்தெய்வ வழிபாட்டு நாகரிகம் சிந்து சமவெளியில் சிறப்பு பெற்றுத் திகழ்ந்ததையும் இந்நாகரிகம் தமிழகம் முதல் சிந்துவெளி வரை பரவியிருந்ததையும் உணர்த்துகின்றன. எனவே தாய்த்தெய்வ வழிபாட்டு நாகரிகமான திராவிட நாகரிகம் பண்டைக்காலத்தில் சிந்துசமவெளி நாகரிக காலத்திலிருந்து சிறப்புற்றிருந்தது என்றும் நாகரிக காலத்திலிருந்து இன்று வரை இந்தியாவின் தென்பகுதியில் நிலைத்து நின்று கொண்டிருக்கிறது என்றும் கருதலாம்.

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தமிழக ஆட்சியாளர்களின் கலை, கலாச்சாரப் பண்பாடுகளில் சிந்துவெளி நாகரிகத்தின் தாக்கம் - ஓர் ஆய்வு

மா.ந. சொக்கலிங்கம்

முகவுரை

சிந்துவெளி நாகரிக காலமான கி.மு.3250-க்கும் கி.மு.2750-க்கும் இடைப்பட்ட அக்காலத்திலேயே அங்கு நாகரிக வாழ்க்கை வாழ்ந்துள்ளனர். சிந்துவெளித் தடயங்கள் மொகஞ்சதரோ, ஹரப்பா ஆகிய இடங்களில் கண்டறியப்பட்டன. மொகஞ்-சதரோ என்னும் சொல்லிற்கு 'மறைந்தோர் மண்மேடு' என்று பொருளாகும். இந்தப் படிமங்களிலிருந்து கண்டறியப்பட்ட அக்கால கலை, கலாச்சாரப் பண்பாடுகளின் பிரதிபலிப்புகள் பிந்தைய திராவிடத் தோன்றல்களாம் தமிழக ஆட்சியாளர்களின் வாயிலாகவும் வெளிப்பட்டுள்ளது என்பதை இக்கட்டுரை சற்று அலசி ஆராயும்.

சிந்துவெளி நாகரிகத்தின் தோற்ற மூலங்கள்

உயர்ந்த நாகரிக மக்களான சிந்துவெளிப் பகுதியினர் எழுத்துமுறை, கட்டடக்கலை, நகரமைப்பியல், வாணிபம், வானியல், நீர்ப்பாசனம், உலோகக் கலவை, மட்பாண்டக்கலை, இறைவழிபாடு, வேளாண்மை என்று அனைத்துத் துறைகளிலும் நாகரிகத்தின் உச்சி முகட்டை எட்டி இருந்தனர் என்பதை அறிய முடிகிறது.

கட்டடக் கலை

சிந்துவெளி நகரம் செங்கற்களால் கட்டப்பட்டிருக்கின்றது. சுவர்கள் நில மட்டத்துக்கு மேல் செங்கற்களால் கட்டப்பட்டிருக்கின்றன. கீழ்த் தளம் முரடான செங்கற்களால் கட்டப்பட்டிருக்கின்றது. சில சுவர்கள் கற்களால் எடுக்கப்பட்டுள்ளன. வீடுகள் பெரும்பாலும் கிணறுடையனவாய் இருக்கின்றன. குளிக்கும் அறைகளோடு கட்டிய வீடுகள் பல காணப்படுகின்றன. வீடுகளின் அழுக்கு நீர் வெளியே போவதற்கு செங்கல் பதித்த வாய்க்கால்கள் இருந்தன.

கிணறு கட்டுவதற்கு ஆப்பு வடிவச் செங்கற்கள் பயன்படுத்தப் பட்டுள்ளன. நாகரிகத் தொன்மை வாய்ந்த எகிப்து, சுமேரிய, பாபிலோனிய, கிரீசு முதலிய புகழ்

பெற்ற நாடுகளில் செங்கற்களைக் கொண்டு கட்டிய கட்டங்களைக் காண்பது அரிது. உரோமானியப் பேரரசை நிறுவிய அகஸ்டஸ் காலத்தில் தான் சுட்ட செங்கற்களைப் பயன்படுத்தியும் முறையை மேலை நாடுகள் அறிந்தன. ஆனால் 5000 ஆண்டுகளுக்கு முன்பே மொகஞ்சதரோவில் சுட்ட செங்கற்களைக் கொண்டு மாபெருங் கட்டடங்களைக் கட்டியுள்ளனர். ஆக உலகிலேயே சிந்துவெளி மக்கள் தாம் செங்கற்களைச் செய்ய முதன் முதலில் அறிந்திருந்தனர் என்று தெரிகிறது.

இரண்டு மூன்று அடுக்குகளைக் கொண்ட மாடி வீடுகளைக் கட்டியிருந்தனர். நகராட்சி மன்றமாக இருக்குமோ என்று எண்ணத்தக்க ஒரு மாபெரும் கட்டடம் கண்டுபிடிக்கப்பட்டுள்ளது. தெப்பக் குளங்களை அமைத்து அதில் நீராடியிருக்கின்றனர். விளைந்து வரும் தானியங்களைக் கொட்டி வைக்கக் களஞ்சியங்களை அமைத்துள்ளனர்.

நெசவு

கம்பளியும், பஞ்சும் நெசவு செய்யப் பயன்பட்டன. பாபிலோனியப் பழைய சாசனங்களில் ஆடைக்குச் 'சிந்து' என்னும் பெயர் காணப்படுகின்றது. திராவிட மொழியைப் பேசிய குழுவினரே ஆடையைப் பாபிலோனியாவுக்குக் கொண்டு சென்றனர். (ஆதாரம் : Regozin's vedic India. Page.307)

வாணிபம் - வழிபாடு

சிந்துவெளி மக்கள் சுமேரியரோடு வாணிபத்தொடர்பு கொண்டிருந்தனர். சக்தி வழிபாடே பெரும்பாலும் மக்களுக்கு உரியதாய் இருந்தது. சிவன் வழிபாடும் உண்டு. விலங்குகளையும், மரங்களையும் மக்கள் வழிபட்டனர். இறந்தவர்களைச் சுடுதலும், புதைத்தலும் அக்கால வழக்கமாய் இருந்தது.

தமிழ் இலக்கியங்களில் சிந்துவெளித் தாக்கச் சிந்தனைகள்

தமிழகத்து நகர்களில் சிவன், திருமால், பலதேவன், முருகன் முதலிய தெய்வங்களுக்கு ஆலயங்கள் இருந்தன.

ஏற்றுவல	னுயரிய	வெரிமரு	ளவிர்சடை
மாற்றருங்	கணிச்சி	மணிமிடற்	றோனும்
கடல்வளர்	புரிவளை	புரையு	மேனி
யடல்வெந்	நாஞ்சிற்	பனைக்கொடி	யோனு
மண்ணுறு	திருமணி	புரையு	மேனி
விண்ணுயர்	புட்கொடி	விறல்வெய்	யோனும்
மணிமயி	லுயரிய	மாறா	வென்றிப்

பிணிமுக ஞாலங் றோலா ஞர்தியொண் காக்குங் நல்லிசை செய்யோ கால நால்வர் னுமென முன்பிற் (புறம்-56)

பிறவா மறுமுகச் வால்வளை நீலமேனி யாக்கை செவ்வே மேனி நெடியோன் பெரியோன் ளணிதிகழ் வாலியோன் கோயிலு கோயிலும் கோயிலு கோயிலும் (சிலம்பு)

நுதல்விழி பதிவாழ் நாட்டத் சதுக்கத்துத் திறையோன் தெய்வ முதலாப் மீறாக (மணிமேகலை)

விஜயநகர, நாயக்கர் காலக் கலைகள்

விஜயநகர மன்னர்கள் காலத்திலும், மதுரை நாயக்கர் காலத்திலும், மகாராட்டிரர் காலத்திலும் விமானங்களை விடக் கோயில் மதில் சுவரின் வாயில்களின் கோபுரங்கள் உயர்த்திக் கட்டப்பட்டன. மதுரை (நாயக்கர் மகால்), திருவண்ணாமலை முதலிய கோயில்கள் இக்காலத்தில் புதுப்பிக்கப்பட்டன. திருமலை நாயக்கர் மகால் புதுமை வாய்ந்த கட்டமாகும். கிருஷ்ணாபுரத்துச் சிற்பங்கள் மிகச் சிறந்தவை. வேங்கடாஜலபதி கோயிலின் திருமண மண்டபத்தின் பகுதியில் உள்ள ஒவ்வொரு தூணிலும் சிறந்த சிற்பங்கள் அமைந்துள்ளன.

தற்காலத்தில் சிற்ப, ஓவிய, கட்டடக் கலை

தமிழர் போற்றிப் பேணிப் பாதுகாத்த இக்கலைகள் ஆங்கிலேயர் காலத்தும் போற்றப்பட்டது. இந்திய நாட்டு அரசப் பிரதிநிதிகளின் சிலைகளும், மாகாண ஆளுநர்களின் உருவச் சிலைகளும் அமைத்து இருந்தமை இதற்குச் சான்றாகக் கூறலாம். தற்காலத்தில் கண்ணகி, வள்ளுவர், காந்தியடிகள், பச்சையப்ப முதலியார், தியாகராய செட்டியார், அறிஞர் அண்ணாதுரை சிற்பங்கள் செதுக்கப்பட்டுள்ளன. ரிப்பன் கட்டடம், எல்.ஐ.சி.யின் பதினாறு அடுக்கு மாடிக் கட்டடம் ஆகியவை கட்டடக் கலைக்குச் சான்றாகக் கூறலாம்.

முடிவுரை

சிந்துவெளி காலம் அடுத்த சங்ககாலம் தமிழ் வேந்தர்களின் தண்ணிழல் காலந்தொட்டு தற்காலம் வரை சிந்துவெளி நாகரிகத்தின் தாக்கத்தைப் பதிவு செய்வதே இக்கட்டுரையின் முடிபாகும். தமிழக ஆட்சியாளர்களின் கலை, கலாச்சாரப் பண்பாட்டுப் பதிவுகளில் சிந்துவெளி நாகரிகத்தினைப் பின்பற்றினர் என்பதற்கான சான்றுகள் அல்ல இவை. ஆனால் அந்த நாகரிகத்தின் தாக்கங்கள் பின்வந்த ஆட்சியாளர்களின் கலை, கலாச்சாரங்களில் பிரதிபலித்திருக்கக் கூடும் என்பதே இக்கட்டுரையில் முடிவாகக் கூறப்படுகிறது.

COMMENTS ON THE INCISED STONE AXE FOUND IN TAMIL NADU IN 2006

Asko Parpola

I have myself been interpreting the Indus script as based on a Dravidian language (see my book Deciphering the Indus Script, Cambridge, 1994), and the reading proposed by Mahadevan would certainly strengthen the view that the Indus people spoke Dravidian. But does Mahadevan's claim hold good? At the outset I must admit that I have not seen the original object, while Mahadevan has seen it. In order to overcome this disadvantage, I suggested to the Tamil Nadu State Department of Archaeology that a silicone cast of the axe should be made, since such a cast would faithfully reproduce every detail in the pecked marks and eliminate colour-based visual illusions. I am glad to state that the Department did accept this proposal, but it seems my suggestion was misunderstood, for the photograph which I received at the end of 2006 shows application of blue-coloured material upon the surface of the axe rather than an impression of it upon a uniformly neutral surface.

In the photograph publised by the Hindu and in another exellent picture sent to me by the Tamil Nadu State Department of Archaeology and published here with permission, the first two marks from left to right do evoke the two Indus signs with which they have been identified by Mahadevan in my mind as well. But the resemblance is vague. and on several other photographs of the axe which I have received, I fail to see any corroborative evidence. Let me be very specific.

The first, N-shaped mark does not unambiguously have the charactreristic great loop into which the upward going line on the right-hand side always ends in the corresponding Harappan sign. Evidence for what Mahadevan calls "ribs" (horizontal right-going extensions on the upward -going right side) is extremely tenuous. There is, however, another Harappan sign lacking these "ribs", as Mahadevan has pointed out, but it does not occur so often in the Indus inscrip-

tions and is not part of the "well-known and very frequent combination [of two signs] on the Indus seals and sealings especially from Harappa", which Mahadevan claims to be represented here. The left to right direction assumed by Mahadevan deviates from the normal direction of writing in the "classical Indus script".

Incidentally, Mahadevan's pictorial interpretation of this sign as a symbol for the god Muruku is inconsistent with the fact that these "ribs" are in some variants of the sign placed to its loop part (see Parpola, Deciphering the Indus Script, 1994: page 71, no. 87, a-c, f-i, u, w, z, aa, bb, cc), which Mahadevan apparently understands to depict "head" or rather "skull": according to him, "the deity is represented as a skeletal body with a prominent row of ribs.... and is shown seated on his haunches, body bent and contracted, with lower limbs folded and knees drawn up... the skeletal forms in the pictograms suggest that the god was conceived as a disembodied spirit." To my knowledge, the god never has a skeletal form in the historical iconography of Muruku.

The second, U-shaped mark looks like having the characteristic two short outward-going extensions at top on the left side (though even here the apparent duality may be accidental, taking into consideration the roughness of the cut-marks), but on the right side these two extensions seem to be lacking. N and U as such are too general shapes to prove the Harappan affinity of these marks. When the consequences are so far-reaching, one must be particularly cautious against reading into the object one's expectations instead of what really is found there. Every detail should match. In this case the uncertainties are too overwhelming, especially as the pecking makes the resulting "lines" discontinuous. The remaining two signs on the axe may be left out of consideration here - their alleged counterparts in the Indus script never occur side by side in the Indus texts.

In this paper "From the Megalithic to the Harappa: Tracing back the graffiti on the pottery" (Ancient India 16, 1960, pp. 4-24 with plates I-XXXIV), B.B. Lal claimed that the graffiti marks on th Iron Age Megalithic pottery of South India contain survivals of the Indus script. Mahadevan approves of Lal's thesis and in particular of Lal's identification of a sign from Sanur with an Indus sign, namely the sign which Mahadevan interprets as a symbol for the god Muruku, but without the "ribe". As the lines are continuous in the sign from Sanur, its comparison with the Indus sign looks quite convincing. But if we consider this sign in it context, taking into regard all the graffiti discovered in the excavations at Sanur, we understand that this close similarity to the Indus script is accidental. It occurs as the leftmost in a group of three signs. Out of the 39 graffiti from Sanur, almost

50% seem to consist of groups of three signs and one recognizes that in most of these graffiti, two of the signs are identical with the two signs with which the Indus-like sign occurs ("trident" and "doubled U"). The thied sign in these groups of three corresponds to the Indus-like sign, but in the other groups it has a zig-zag shape with a varying number of dentations, including W - and M - shapes but often a longer series. To me it is clear that the Indus-like mark has accidentally been drawn with the loop on the right, the intended shape being actually M-like. This example illustrates well the uncertainties involved in reading the marks on the axe.

The Sanur graffiti illustrate another important factor. I have already pointed out (Deciphering the Indus Script, 1994, p. 55) that their similarities with the Indus script "concern only rather general shapes, and there cannot be any question of real writing. In those relatively few cases where as many as three signs have been incised, the signs are always the same, but their order varies." This variation in the order of the same three symbols suggests that they do not represent language-based writing where the order of the signs is pivotal, but non-linguistic symbols (e.g. marks of ownership).

The scanty inscriptional evidence (see Jaget Pati Joshi and Asko Parpola, ed., Corpus of Indus Seals and Inscriptions, I, Helsinki 1987, pp. 352-354) from Daimabad in Maharashtra suggests that real writing was on the verge of disappearing during of the Indus script (the one with which Mahadevan identifies the second mark from the left on the Tamil Nadu axe) is represented alone in a seal from Daimabad (Dmd-1), such a sole occurrence being without a parallel among the seals of the Mature Indus Civilization.

Daimabad is not only one of the latest but also the southernmost known Harappan site. It is not too far removed from when and where the Tamil Nadu axe was manufactured (on these questions, see the comments by Dorian Fuller and Nicole Boivin below). In view of this, I do not deny that Mahadevan's identifications are possible, but in my opinion they are very far from certain, and I remain sceptical.

This paper will be published in: Toshiki Osada (ed.), Linguistics, Archaeolgy and the Human Past (Occasional Paper 2), Kyoto, Japan: Indus Project, research Institute for Humanity and Nature, 2007. An advance copy of the paper is being sent to the Tamil Nadu State Department of Archaeology in the hope that it will be useful for its international symposium on the axe in chennai in February 2007, as we unfortunately are unable to attend this symposium personally.)

I am septical that the marks on the stone axe could be a real Indus inscription. I would rather see it as part of the the same tradition as Megalithic potmarks. This comes from a number of observations.

1. The axe comes from a region (coastal/easthern/southern Tamil Nadu) which is not part of the Southern Neolithic and does not have any Neolithic tradition. While Neolithic axes have been found throughout Tamil Nadu occasionally, these are probably trade items that came to hunter - gatherer societies there. The only known Neolithic settlements in Tamil Nadu come from the northern-and Westernmost districts, e.g. Dharmapuri District.

2. I would guess that this axe dates to closer to 1500 BC and certainly after 1800 BC. The only early and middle Neolithic (i.e. Allchin Phase I and II, and pre-dating 2000 BC) sites are known from the core region of eastern Karnataka and westernmost Andhra (i.c. Raichur, Bellary, Chitradurga, but also as far south as Banahalli). These also are relatively few. Southern Neolithic sttelment only seems to pack out the landscape after 2000 BC and mainly after 1800 BC. It is only during this later period (Phase III) that Neolithic spread to Kurnool, Cuddappah, southern Karnataka and Dharmapuri. Agriculture further south and east in Tamil Nadu probably began only in the Iron Age, probably at first with a mainly pastoral phase. It is increasingly hard to believe that real Neolithic settlement in Tamilnadu has evaded archaeological discovery; it is more reasonable to assume it was never there through trade (equivalent in general terms to Neolithic axes in Scandinavia).

3. From our recent work at Sanganakallu (mainly my collaborators Ravi Korisettar and Mike Petregalia), it is clear that stone axe production intensified in the period 1400-1300BC. From that period we have massive 'industrial' production of celts for export. We have now excavated a dolerite axe quarry and flaking and grinding sites so we have the whole process. While axes are produced throughout the occupation of Neolithic sites in this area (from ca.2000 BC) the period of really intensive specialised production is well dated now by our recent AMS program (in press in the journal Antiquity) to the earliest 'Megalithic' (defined by 'megalithic' wheelmade,slipped

pottery-'black and red ware' being present-but in small quantities), 1400-1300BC in three different stratigraphic sequences. We have run 52 AMS dates in the last couple of years which double the number radiocarbon dates for the whole region.

4. This is also a period when late Neolithic urn burials are common (possibly starting a couple hundred years earlier in some areas); we have one well-dated urn from Hiregudda near Sanganakallu also to this ca.1300BC axe factory phase. The magalithic sarcophagus tradition, including pot-marked pottery; may start shortly after this,although good dating evidence remains rare.

5. Associated with some Megalithic pottery and burials, including urn burials (many of which are pre-Iron Age and lack Iron) , there are pottery marks, generally of one or two "characters" or pictures. The best recent publication on this is by Nicole Boivin in South Asian Studies 29 (2003). Although as Lal had pointed out some of these resemble Harappan characters (and may well have been borrowed), there is no good case that these were used as real writting.

The find of such marks on a stone axe is nevertheless of great interest.

Nicole Boivin

Interesting find. I concur with Dorian concerning the likeliness that these are megalithic 'graffiti' marks rather than Indus script. I would also point out that we have (rare) none representational marks made on axes as part of the production process in the late Neolithic/early Iron Age. Cambridge Archaeological Journal, Vol.16:2 (2006), has an article on this by myself and several lithics specialists associated with our research project in South India that discusses these: Adam Brumm, Nicole Boivin and Richard Fullagar, "Signs of Life:Engraved Stone Artefacts from Neolithic South India" (pp. 165-190). These obviously different from the graffiti type marks, but suggest a local tradition of making marks on ground stone axes at this time period.

READING OF INDUS SCRIPT - JAIN ASSOCIATION

Dr. Sneh Rani Jain

Great work is done by the earlier researchers to explore the unknown world of Indus Civilization which shows its spread not only in the present India but also over the sourrounding- lands, now different countries through its Signs and Symbols found either, through excavations or seen inscribed on Rocks and cave shelters. The interest shown by the team of epigraphists from world over during the whole past century indicates how much is the zeal of this generation to understand the message, left by those writers of ancient past .

Mountanous work is done in explorations collecting those Finds, -sorting them out; preserving them and presenting information to the world eagerly awaiting to decipher and identify them as is the case of the alleged Axe found in Mayiladuthurai last year .

The question placed before us is whether Tamil language has near connection with the Indus Language.? To evaluate that I put forward some points before the house to view and reason.

1. As we all know a language has either **Phonetic;** or **Symbolic** expression to convey it's purpose. Hence they are called the Ideograms. The Indus signs and symbols have that miracle of being the Ideograms. So are the pictures there in, to be named as Pictograms . Conventional signs are also possible but with proper reasons. There are no Phonograms but one in the Indus script and that is  also shown as  and  and 

2. For conceiving the meaning of a sign through the method **of Rebus** the warning stands that no attemted decipherment is likely to be true if it contradicts / is not in accordance with the basic findings of the structural analysis of the Script and the texts.

That is how Mahadevan could read  or  as Murukkan; the **dead** (Maran/ Samadhi maran) but not the killer as he has also called it as Preta , killer etc. The figure lying on it's side or even if read as seated, again  cannot be Bhishma of Mahabharat as earlier Mahadevan suggested because Bhishma laid straight on arrows while the shown figure is not straight. The backside lines are hidden from the person standing in the front facing the figure. Thus that shows rather the thought faculty of the dying person not visible to others but not the arrows when  and  holding a whisk in the lap . That can only be a Jain Monk.

Mahadevan has not spoken about this sign  and the one  wearing a Trident on head. They also show the dying Penanacers, but lying straight.

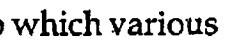
The figure of balance  with an umbrella on it signifies equal share under some protection, similarly  give thier purpose to be there.

If from,  the idea comes of the **load bearer** it means holding equal responsibility. Yes, that is the Acharya holding equal responsibility of his Sangh ; Monks as well as the Lay persons. With modifications the same Acharya appear in the Indus Texts like  and  which not only human eye but computer is also bound to read different.

Another sign of kavati is also controvertial  and can be seen in practice in real life when one wants to climb the hills of shikharji / the famous Parshwanath Hills of Jhar khand if one wishes so. The single load bearer also are seen.   But for the Lines showing steps the meaning differs and combines the sign of ladder  ,  very often appearing in the Indu texts.  fish, holding it is not a swimming fish. But a standing *kayotsargi yogi* for his Gait and denotes his intended spiritual elevation, Bharat being a country of spirituality ever since . With three hill peaks the sign should carry some special meaning of spirituality  Some decipherers have named the three peaks as those of dairy but with the tilted peaks it can not be dairy  but the hill temples an slopes and on ascends. The twin hills had value for spirituality and hence fame as is evident from the sign  or  and 

Decipherers have named  ,  as rains but what to say about  and, where sets of four are distinctly shown. That can not be rains but the daily remembered twelve Reflections which are a part of *samayik*  and *Dhyan* and can be called as the **conventional** sign for the three sets of reflections called as *Dwadash Anupreksha.*

Swastik is the most common sign that is seen in the Indus texts. and joins all those territories under one cultural umbrella. That is also a **conventional**

sign. From it comes the sign not interptreted by the decipherers so far but is a part of the swastik itself  the sign of *pancham gati* of Salvation to which various stages are also displayed in the theme bearing conventional signs like: 

The two rings are already explained in my paper as the miniature representatian of Dhai Dweep of the Jain Cosmo Geography  and  all these interpretations are supported by the ancient scriptures of the *Jain Agamas* as well as the Archaeological remains seen lately in past three years that play here the role of the **Indus Keys.**

Tamil alphabets however are neither pictorial nor conventional. Also not even the Ideograms. They are the fully evolved sign expressions for typical regional later evolved language from Indus with its script as Dravid Prakrit very much careful in preserving its cultural ancient values.

The Origin of Dravids

The Jain Scriptures seem to have been destroyed in masses during the pre Mahavir and the post- Parshwanath period because the Inscriptions on some of the ancient Jina Images which are given bath daily and are under regular daily worship have appeared in the Indus sign script. They have also appeared on some of the ancient Jain cave temples. specially, as already shown in my paper

In the Jain Cosmo Geography *(Tilloya, Pannatti)* a three tire universe is shown with *Urdhwa, Madhya and Adho loka* in totality being called as the Triloka Sansathan. Only the Madhya loka, is for our worldly survival though the Swastik reveals all the three hence the transmigrations of the Souls. The madhya Loka is made of Lands and oceans encircling one in another. The central land is the Jambu Dweep having Mountain Maru at its center. The Human survival is shown to be only in the Dhai Dweep. The detils of Jambu Dweep are such that our present globe fits in its south most are called as the **Bharat Kshetra;** that has yet its six land areas. The Five are Mleccha khandas, while one is the Arya Khanda where only the Aryas resided called the Aryans. In that Arya khand was the land **Bhaaratvarsh** or the Aryavart which was also known as Ajanaabhvarsh. The Westerners have named it as India but it's original name is Bharatvarsh where only Aryans re-sided under one umbrella of the Chakravartins peacefully with six occupations; Agriculture, self protection from invaders if any or otherwise animals and natural calamities; writing and learning; Trade; Art and spreading settlements. Life was harmonius because people were satisfied. Every one had the hang for

spiritual survival. Even worldly accomplishments could not stop people from opting for renunciation and penance. So came up huge Sanghas of monks / Shramanas.

Various Shraman Sanghas were known Some of which are known as Sinha Sangha, Nandi Sangha, Yapaniya Sangha, Kashtha Sangha, **Dravid sangha,** Mathur sangha, Bhillak Sangha etc. The **Dravid Sangha had divisions as Nandi Anvaya Gaccha, Urukul Gana, Erigittar Gana, Moolital Gaccha** etc. The followers of that Dravid Sangha were called the Dravids but they all were Aryans only. In India no difference of color and conplexion ever rose. Krishna and Rama both were dark conplexioned while they had the most beautiful fair colored wives. It is narrated that Acharya, Pujyapaad's desciple **Vajra Nandinandi founded the Dravid Sangha in Vik. Era 500-543.**

Out of the total Jain cave temples of India maximum are in the Tamil Nadu where the Jain monks took shelter in the pre historic period even earlier to the birth of Gautam Buddha and Mahavir. In most of those cave temple one sees Jina images made either on the cave brow or on the rock walls. Some images are with the snake hood mistaken as of Parshwanath but they are not of Parshwanath instead of the **seventh Tirthankara Suparsvanath** having the penta hooded snake umbrella. Not only that, in the Naagar Kovil temple of Naaga raaj the Naagaraaj and his two wives possess the same penta. hooded umbrella. Soon after entering the main door one sees on four pillars the Jina images two seated and two standing. One of the seated and one standing image have the pentahooded snake umbrella on them confirming them to be Suparshwanath. That indicates that much earlier to Parshwanath Tamil Nadu had influence of Suparshwanath already prevailing.

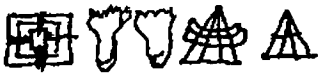
It is for that reason that Shramans and Monks preferred to go to South and live there meditating in the Caves in hundreds where simple food as rice water or Coconut water was easily provided by the householders and the climate was also not distressing. Acharya Bhadrabahu with his huge Sangha moved to South during the 12 years famine with Chandra Gupta Maurya indicates that Jainism was flourishing in the South and Tamil Nadu Caves were sheltering the Jina Shramanas. Even the Ceylone Caves were sheltering the Jina shramanas.

During my Exploration tour to Tamil Nadu Caves I found Indus Signs inscribed on the cave sites near Madurai in plenty. Also some of the ancient Jain temples in the remote villages near Chennai. All the cave sites are remote and peaceful except around Madurai where querris are cutting the beautiful

mountains damaging what all ancient treasure is beyond to mention.

Tirukkovilur has the largest Chaturdiki on a huge boulder rock in almost a deserted village.

Sittannavasal has Siddha Images in the caves with tri umbrella  while on the hill rock are the tri and Uni-umbrella Jinas with one image of Suparshwanath. 

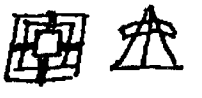
Tiruparankundram 

Melsittamur 

Kilsattamangalam 

Veelkam 

Tirupanmur 

Karandai Munigiri (At it's entrance the ancient temple has) 

Arpaakam

Perumal Malai  two more signs one of Triloka Sansathan and another of checked area with 36 sections denoting the 36 virtues of the residing monk. **Kalagu Malai, Samanarmalai and Animalai cave terples** are awfully neglected.

The alleged Neolithic stone Axe does not seem to be an axe but a holy stone used perhaps as the door fixer to some temple cave or if axe then is the broken part of the axe seen in the hand of the **Gomed** Yaksha; a demi God at the feet of Rishabh Jina. Its presumed cutting side has no marks of use. If it were a piece of neolithic age it could not be a show piece but should have been used for some purpose. The hold side shows marks of some damage reflecting as if it were attached through them to some handle.

It could be a **kootak** also to soften the pealed sugarcanes to twist the cane finally to extract the juice as is done even today in remote villages while preparing juices for food for monks. For the sign text seen on it this could not be used as an Axe nor does it seem to belong to the neolithic age for the art of writing on it. The earlier writings were all smoth while this has **rough stroke** work not inscribing the text properly .

The depth at which it was found deserves consideration.

The writing is Indus but not very clear though Tamil Nadu for its other evidences seen an rock beds of Temple caves confirms the Indus culture in the past so much so that the first Indus Key on the huge boulder rock of Karnataka is named by this researcher as the **Seed Indus Rock Of Karnataka.** The South Plateau of India on the whole was equally covered by the roaming Shramans while their Vihaar and their influence cannot be denied for the texts inscribed on their shelter cave rocks. This alleged Axe is also a part of those evidences seen in Tamil Nadu.

The Indus script was a script of ethical / philosophical expressions and was not necessarily spoken. However there were languages for communications and also Indus gave birth to regional Prakrits. Dravid languages belong to the followers of the Dravid Sangha and hence there stands no doubt about its relation with Indus alike the other regional prakrits.

Ashoka's daughter and son moved towards Sri Lanka where already Jainism was prevailing. In Laksha dweep as I am informed, even today the houses, the boats and the coconut trees bear Indus sign marks as the identity marks which are used by the people there for their Trade mark as well. Without Indus influence in the past it could not be possible.

One should not forget that India had originally the Shram an Culture even earlier to Vedas. Sanhitas were written by Rishis and Munis. Rigveda itself is a compilation of Sanhitas and mentions of Rishabh and Arishtanemi the 22nd Tirthankara. Thus writing was in practice. we have lost the threads some where and missed the language but instead of giving phonation to the Iindus signs we must try to understand the message rather and try to find correlation between Indus and the later evolved or even regionally influential languages. Instead of looking for Indus grammer we should understand the message following the mathod of Rebus. The Indus Keys seen on the Jinas suggest this now without wasting time any more. That is all I have to suggest.

HARAPPA CULTURE AND ITS CONTACT WITH TAMIL NADU AND OTHER PARTS OF INDIA

Dr. D. Bhengra

The Mundas, one of the Proto Astraloid group of Asia minor (between 5th and 4th century B.C) migrated from Iran to the bank of the Indus river through 'Kaiber and Bolan Pass. They were basically pastrol and agriculturist and lived in fortified cities built with stone in the 3rd or 1st half of the 2nd millenium B.C. However, Mundas moved to bank of river Ganga after the battle with Aryans. The archaeological evidences from excavation (1921-22 at Mohenjodaro) represent one ethnic group namely aboriginal Proto- Astraloid type.

The locations of the Mundas are the Dhaulagir and Maiagir after Aryan invasion. Rig Veda Samhita tell us numerous conflict between the invading Arya warriors and the depised Dasyus. The names of a number of Dasyu warriors and their Aryan opponents have been preserved in the passages of that invaluable work. There are close resemblances of names of Dasyu with Mundas of present day. The second traditional legend of the Mundas mentions Ajamgarh as the cradle of the race. According to Cunningham the origin of the Kulindas in the hill district between the River Beas in Punjab and the River Tons (ancient name - Kuni-nda-des), are connected to the Mundas of Chota Nagpur. Also, he mentions that the Mons of the Cis Himalayas may be connected with the Mundas of Eastern India.

The ancient Kulinga - Desa was the land of the ancestors of Mundas and other Kolanian tribes until the invasion of the Aryans. Rig - Veda mentions the relationship of mountainous region with Dasyas and their early settlement in the hilly tracts of North Western India. Indeed, Mundas always settled in some high mountains.

Gradually, the Mundas appear to have come up as for as the present district Azimgarh. According to local tradition Azimgarh District was in ancient times included in the kingdom of Ayodhya, the land of Rajbhars and Suiris. General

Cunningham had identified the Suiris or Sirs tradition with the Savaras who are genetically connected with the divisions of the Kols, including the Kurkus and Bhils in the east, the Santal and the Bhumyas, the Mundas and the Bhumnijis and the Juangs in the east, the present tribal communities of India.

From Azimgarh, according to Mundas tradition the remote fore fathers of the Mundas who proceeded to Kalamgjargarh or Kalangjar, presently famous place in the Banda District in modern Bundelkhand. The Veda, Mahabharatha and Padma purana refers this place as an important religious as well as a holy place in ancient India. The origin of the Kalangjar from ancient Munda Natriarch-Kalanga, a name still prevailed among the Chota Nagpur Mundas. Also, there are references in the Sanskrit literature about the land of Mundas Pulinda desa, the land of Pulindas (Pulinda of Ptolemy and Molendae of Pliny) which are the genetic name for the Kol tribes who are the inhabitant of District of Banda.

The next place after Kalinjar, Mundas tradition fixes as that of the Mundas is Garhi - Chitr and this place is in all probability no other than the celebrated place of pilgrimage known as Chitrakaut of Chitrakot in Paraganah Parawar and Tahsil Karwi of the Banda District in Bundalkhand. About many miles north - east of Nandergarh and adjacent to village Kampurwa is another and a large village now known as Pipania. This place may perhaps be identified with the Garhpipar of Munda tradition.

Scattered all along the boundary line between Bihar and Chota Nagpur, may be seen the characteristic Mundas or Sepulcharal stones. As we learn from a note by Mr.T.F.Peppe in the Asiatic Society's Journal (Bengal Branch) Part-I p119 "in the wilder part of Bihar in Parpana Japla, Balmaja girris, Kutumsha and also in Sher Ghati they (monument stones) are of ten to be most with, and their having found scattered over the country leaves little doubt of their Kolarian origin to which local tradition assigns them"

After that, the Mundas moved to Rajgarh. The Raj garh of Munda tradition would appear to be identified with Raj gir or Raj griha, a former capital of Meghadha. Mention is made in the Mahabharatha of this place under the name of Girivraja, as the ancient capital of Jarasandha. Then the Mundas moved west of Rohtasgarh and after the struggle with another aboriginal tribe the Kharwars, Mundas along with their companians and kinsman but the Santals, deserted this place.

Some of the Kol tribes such as the Korwas, the Asuras, the Birjias and the Kisans, appears to have followed the course of the Kol till they reached the present District of Palamau and Ranchi and even to this day these tribes occupy the South - Eastern parts of the District of Palamau and the western part of Ranchi District. At village Esko which is about 50 kilometre south of Hazaribagh District there is a rock painting which is ascribed to Santal and they have nice resemblance to the Harappa seal and sealing (photograph)

Now at length the Santal and the Mundas parted company. The Santal left Nagpur (Chota Nagpur) crossed the Damodar and settled down in Sikunarabhaum (the modern District of Hazaribagh) and later on followed the course to the Damodar and passed on to Manbhum and to the Santal Pargahas. Their kinsmen, the Bhiuas, appear to have preceded then along the same route and then down the course of the Essar River into which are now the Manbhum and Singhbhum District. The Mundas preferred to stay on in the forest of that region of what is now the Ranchi District.

In this new home of the Mundas, their kinsmen, the Asuras appear to have already preceded them and worked some of the iron ores which abounded in the country. According to the Mundas legend there was a struggle between the Mundas of the iron smelting people, tribe of Asura in which the later were worsted and the Asuras appear to have retreated to the remote western parts of the present District of Ranchi and left the Mundas undisputed master of the entire country.

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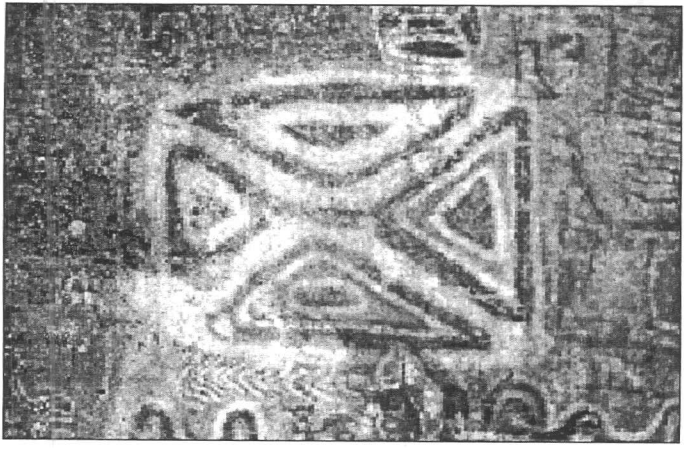





GRAFFITI ON THE ANCIENT INDIAN POTTERY AND THE DECIPHERMENT OF THE INDUS SCRIPT

Dr. S. Gurumurthy

The graffiti which occur in pair or in association with more than one symbol are termed as LIGATURED GRAFFITI. They are termed so, for convenience of differentiating the individual or single graffiti. Further, these graffiti constitute a class by themselves and offer us much evidence to consider them as a sort of script. Their length varies from two to seven signs. They have been noticed on the potteries of the Pre-Harappan, Harappan,, Chalcolithic and the Pre and early Iron Age. In majority of the ligatured graffiti, the symbols are distributed in a horizontal straight line like a script. But the size is not uniform in many cases. In some cases the symbols are super imposed and that poses difficulty in identifying the individual symbols. Sometimes different Brahmi like signs are shown super imposed or overlaping, and that suggests that the primitive method of writing ie. the signs which ought to have been shown in a line are superimposed. This is one of the striking characteristic feature of the ligatured graffiti. This method of super imposition of signs or letters is not generally noticed in the case of inscribed potsherds. For, the signs in the latter constitute a script which may either be Harappan or Brahmi.

In most cases we notice that the symbols superimposed are different in character and shape. The symbols are shown at various angles and also upside down or simply projecting from the top or bottom or hanging. In a few cases, short or long strokes are added to as individual symbol either at the top, middle or at its bottom. The additions of these strokes change the morphology of the basic symbol. But the addition of strokes is generally seen in the case of Brahmi like symbols.

While drawing the symbols, the potter or scribe did not follow any system or method in respect of spacing. It seems that he could have hold the vessels at different angles while scratching the symbols on them. But the question remains unanswered is why different symbol are superimposed.

There are nearly 768 ligatured graffiti in all collected from various sites. The maximum length of a ligatured graffiti in different cultural context is given below: .

3 Signs for the Pre-Harappan

7 Signs for the Harappan

5 Signs for the Chalcolithic eg.Daimabad

6 Signs for the Iron Age Habitation eg. Arikamedu, Alagarai

5 Signs for the Iron Age Burial eg. Nagarjunakonda

The two signed ligatured graffiti predominate in almost all the sites.

Regarding the ligatured graffiti of the Pre-Harappan sites, Brahmi letter like symbol are not uncommon. Further short or long strokes are added to these signs.

Majority of the graffiti from Harappan sites are very similar to the Harappan script on the earthenware vessels. Though they are considered to be the inscribed sherds with Harappan script, they are included in the present work for the purpose of comparative study and analysis. It is interesting to state that there are nearly 64 sherds with two signs only. The decipherment of these graffiti will be easier than those of the script or the seals, Therefore a sincere and methodical approach may be attempted to read these two signs inscribed sherds and the reading may be applied to the decipherment of the signs on the seals. It may be also observed that the Indus letter signs are not accompanied by figures as on the seals in most cases. Therefore these signs have to be identified among the signs on the seals in pair and the reading should be proceeded. There are many symbols in the ligatured graffiti which have parallels in the graffiti of the Chalcolithic and South Indian Iron Age.

Regarding the ligatured graffiti of the Chalcolithic period the same phenomenon ie. the occurence of the pair of signs is noticed in the majority of the sherds as noticed in the Harappan period. There are also considerable number of sherds with three signs and a few with 5 signs. Most of the signs constituting the ligatured graffiti are very similar to those on the Pre-Harappan, Harappan and the South

Indian Iron Age graffiti.

The Iron Age ligatured graffiti from South India out numbered those from Chalcolithic and Harappan Sites. In fact these graffiti have been built of two or more than two symbols. There are a considerable namber of them with four or five symbols too. In this connection Sanur, Savanadurga, Kodumanal, Tirukkampuliyur, Alagarai, Uraiyur, Karur, Vallam, Arikamedu and T. Nerasipur may be cited as the typical sites yielding bulk of these graffiti. Majority of the symbols constituting the ligatured graffiti are not new and belong to the same stock to which the Pre-Harappan, Harappan and Chalcolithic graffiti belong. It may even be said that the construction of the ligatured graffiti and the morphology of the signs suggest a common source within our country. We could say this because the signs which constitute the ligatured graffiti excluding that of the Harappan present various combination of Indus signs, Brahmi letter like signs and graffiti.

1. Ligatured Graffiti Similar to indus script from South India

However there are as many as 84 ligatured graffiti which are being built of with Indus signs only. Of these thirtytwo reported from Post Harappen and Chalcolithic sites, 52 reported from South Indian sites. Most of the latter carry two or three signs only. These are to be called hereafter *"INSCRIBED SHERDS or INDUS SCRIPT"* and not as "Ligatured Graffiti". These sherds offer various new combination of Indus signs hitherto not reported from elsewhere. They have now become new additions to the already stock of Inscribed sherds of Indus script reported from Harappan and other sites like Lothal, Kalibangan and Daimabad. Till now the scholars had held the view that Daimabad is the southern most point where the Indus Script was in use. But the present study has pushed its southern boundary upto the lower Kaveri. The discovery of these sherds have also dispelled the view of many scholars that Harappan Civilisation could not have stretched its arm over South India and Tamil Nadu as the latter was separated from the former by a vast gap of time and space. But the present author has not only exploded their unfounded hypothesis but also have made sincere attempts to read the script using Dravidian Etymology (Burrow and Emeneau,1984). He has also narrowed down the vast time gap.

These new combination of Indus, signs on the sherds particularly those with two and three signs would be easier to identify and read as they have been found in the land of the Dravidians (particularly Tamil Nadu). The language of this script should be none else than the Proto-Dravidian. Hence, the decipherers need not have any hesitation to apply the proto-Dravidian language to interpret the script. Hitherto the main objection especially voiced by S.R. Rao to apply the Proto-Dravidian language to read the Indus script lies in the fact that such of those decipherer who had attempted to read them in the Proto-Dravidian language did so on the assumption that the script had a Dravidian Origin (Heras, 1953,Vol.I). The present author has now produced a concrete evidence to over rule the objection raised by S.R. Rao and he hopes that the Dravidian Origin of the Indus Script would now be welcomed by the decipherers also who have been arguing for and against the theory of the Dravidian Origin. The graffitology of South India has now proved its credentials to enact a major role in the drama of decipherment of the Indus Script. The present work will certainly help the decipherers to initiate a fresh dialogue to further the process of decipherment of the script to install the same in the gallexy of Archaic Scripts of the Ancient World.

Culture wise distribution and Frequency

The total number of ligatured graffiti collected is 768. Out of these, omitting the ligatured graffiti from Pre-Harappan and Harappan periods, we get the total number of ligatured graffiti as 605. The culturewise distribution and their percentage are given below :

Period		Ligatured	Percentage.
Chalcolithic Habitation	...	80	13%
Chaloolithic Burial	...	6	1 %
Iron Age Habitation	...	398	66 %
Iron Age Burial	...	121	20 %
Total		605	

The above analysis show that the bulk of the ligatured graffiti come from South Indian Iron Age sites ie. a total of 519 which constitute 86% of total collection of ligatured graffiti. The graffiti tradition seems to have slowly and steadily took the form of inscription or script of pictographic or phonographic nature.

This phenomenon which emerged in the Chalcolithic period, reached a matured status in the South Indian Iron Age culture complex. Therefore this sort of ligatured graffiti seem to have served the purpose of a script during the period of assumed the role of the script.

A careful examination of the sign or symbol combination of the ligatured graffiti of both Chalcolithie and South Indian Iron Age reveal interesting points hitherto unknown or unnoticed.

These ligatured graffiti are built of signs or symbols of different combinations such as 1) Indus signs alone, 2) Indus signs plus graffiti, 3) Brahmi plus Graffiti, d) Indus sign plus Brahmi plus graffiti and 5) pure graffiti marks or pictographs.

The late Harappan signs or the degenerated Harappan signs were picked up to build these ligatured graffiti in Chalcolithic period. These graffiti are not the same as those of the graffiti (inscribed sherds of Indus script) reported from Lothal and Kalibangan. They are not included among the Indus signs on the seals or not placed on par with the Indus signs on the seals by the excavators themselves. They were left untouched. These graffiti are to be considered as constituting the late Harappan Script.. S.R. Rao himself has not taken up these ligatured graffiti very seriously, though he has paid more attention to single graffiti representing Indus signs (Rao, 1982). Therefore this group of graffiti has not to be added to the already existing inscriptions of Indus signs.

2. Ligatured Graffiti - Proto-Brahmi

The ligatured graffiti with a combination of Indus signs, Brahmi letter like signs besides graffiti marks are not many, but the appearance of Brahmi like signs in the ligatured graffiti of this period tends to suggest the trend that a new script was on the card ie. the Proto-Brahmi script; but this has not yet taken a shape as suggested by the statistical data shown.

3. The ligatured graffiti with pure graffiti marks dominated the scene as there are nearly 46 out of a total of 86.

4. The ligatured graffiti from the habitation sites out numbered those of the burials. This again confirms our conclusion that the graffiti were something more than mere symbols.

5. The superimposed symbols or signs in the ligatured graffiti suggest the process of disintegration or decline of the Indus script and at the same time they show that the Pre-Iron Age people were on the threshhold of moulding or shap-

ing a new script based on the formation of the Indus script or combination of Indus signs, Brahmi like signs and graffiti marks.

South Indian iron age Period

Here again we notice the repetition of the same trend but with more vigour ie. the ligatured graffiti from the habitation sites out nambered those from the Burials. (S. Gurumurthy unpublished.)

1. The Indus signs on the ligatured graffiti from Tamil Nadu appear as late Harappan or mature or even degenerated Harappan signs. The location of the graffiti has now confirmed our hypothesis that the Iron age people of Tamil Nadu were the descendents of the Harappans.

2. Again the ligatured with the combination of Brahmi like signs and graffiti marks are on the increase (Kodumanal excavation - unpublisbed). They show that the Indus script was slowly giving way to the formation of a new script ie. Proto-Brahmi as said earlier.

3. As in the Chalcolithic period the ligatured graffiti with pure graffiti marks constitute the bulk; (S.A.SALI) this suggests again that the graffiti was serving the purpose of a script either in the form of a pictograph or ideograph or monograph or a combination of all the three prior to the formation of the Proto-Brahmi script. This is not very clear and this aspect of the ligatured graffiti has to be subjected to close examination. However the present author has made attempts to read some of them from among all the abovementioned categories, with proper Dravidian Etymology.

Direction of Writing

The ligatured graffiti with Indus signs (inscribed sherds of Indus script) as well as with pure graffiti marks are read from right to left. But the ligatured graffiti with other combination of signs are read from right to left or Vice Versa depending upon the context rendering sensible meaning. There are only a few sherds with signs clearly drawn overriding. This overriding factor sends some clues to establish that the direction of writing of the ligatured graffiti was from right to left. For instance in one specimen the left sign overrides the right sign. This is clearly visible in another specimen also. These two are the best examples for the ligatured graffiti with pure graffiti marks.

Values

The value for the signs supplied (is given at the end) However for the Brahmi like sign's the value of the corresponding Brahmi letters is supplied assuming

that each of these ligatured graffiti as Proto-Brahmi characters yielding place to the Brahmi script. This methodology for identifying the direction of writing and values and meaning of the graffiti has been uniformly adopted throughout the work. (S. Gurumurthy).

(An attempt to decipher certain prominent ligatured graffiti have been made and their value and meaning derived are tabulated in Fig.1)

Language and Authors of the Graffiti

The identification or reading of the graffiti has been purely based on the assumption that the pictographs or Ideographs among the graffiti represent the Dravidian Language of the bygone days or the language of the Non-Aryan Proto-Dravidians of India. The Tamil words chosen for reading the symbols need not necessarily be of the Proto-Dravidian origin but may be a mixture of the Dravidian language of the Sangam Age and the Pre-Sangam Age because of the fact that some of the symbols have been read with the help of the Tamil words in vogue during the Sangam period also. Even the Tamil words and numerals of the medieval period have been chosen to read them.

The factors which weighed in favour of this reading are as follows:

1. Of the total of 3056 graffiti, more than 60% ie. 2195 have been reported from the Iron age burials and habitation sites of south India ie. Dravidian land. Even among that 60% ie. 1613 are from Tamil Nadu only.

2. Even the Chalcolithic graffiti which account for nearly 20% of the graffiti ie. 548 have come from sites mostly situated in Maharashtra, Gujarat and Rajasthan regions lying south and southwest of Narmada river. We may not be far wrong if we include these regions also with South India or Dravida Desa of ancient period. This is further strengthened by the striking similarity of graffiti and the black and red ware tradition of these two regions. The similarity of the Pre-Harappan, Non-Aryan graffiti and South Indian graffiti lends additional proof to this argument.

3. Majority of the Indus signs not excluding their variants as many as 120 have their parallels in South Indian graffiti which bring the cultures of these two regions to a close proximity inspite of the fact that they are separated by a vast gap of distance and time. As said earlier the gap may be narrowed down to a considerable degree. Though they are not contemporaries the Dravidians would have adopted these graffiti marks as remembrance of the Harappans. In other words it may be said like this; the signs of the Indus script are reflected as the pottery of the Drevidians ie. the most fascinating and Intellec-

tual aspect of the Harappan culture is traceable is the graffiti tradition of South India. Conversely it may be said that the Harappan script has also a very high frequency in the graffiti. They occur 58 times. The fish is known as 'Mìn' in Tamil and the Indus territory was once known as Mìnàdu (Heras 1953) meaning "land of Fishes" It is also believed that the Vyasa, the author of Mahàbhàratha was said to be the son of a 'Matsya' Mìnà. The Sangan Work Purananuru makes a pointed reference to a Chera King Perun-Chèralàthan who was said to have fed the Army of both the Pàndavàs and Kauravàs in the Mahàbharatha War. This indicates the Chera King's association in one way or other with the incident of the Mahàbaratha War. This is yet another proof which not only strengthen the view of the Dravidian Origin for the author of Mahabaratha but also justifies the naming the Indus Territory as Mìnàdu.

Heras once observed that the Mohenjadaro civilisation was not a civilization restricted to the Indus Valley, it was a civilisation that extended all over India and eventually we should find relics of this civilization similar to those of Mohenjadaro all over Indian Sub-Continent. Here prediction has become true as the relics of the Indus Valley Civilisation have been noticed well beyond the boundaries of the Indus basin touching Tamil Nadu and right upto Ceylon as enumerated.

Hall ~~(Hall pp. 173-74)~~ has gone ahead by one step and observed that the culture of India is Pre-Aryan in origin and as in Greece, the conquered civilised the conquerer.

The inscribed sherds with purely Indus signs from a number of Iron age sites in South India particularly in Tamil Nadu bear testimony to this hypothesis. These inscribed sherds lead us to go a step further to pronounce that the Dravidians of South India are the descendents of the Harappans and the language of the latter might to have been Tamil, the oldest of all languages of South India.

It is worth recalling here the observations of Zvelebil(1965, pp.65-69) to strengthen further the argument of the Dravidian origin of the Indus script and their impact on the writing system of the Dravidians. He observes that "There must have been sometime in the fourth to third Millennium B.C, a common centre of diffusion, a strip of land extending possibly from Eastern Africa or Southern Arabia through the Persia Gulf to North Eastern Iran of the Black and Red Ware folk of the Proto-Dravidians and that the South Indian Incisions (Graffiti) may be remains of writing which the Dravidian brought with them in a degenerate impoverished and fragmentary form from the large cities of the Harappan Civilization".

4. Long ago Heras (1953), recently Parpola (1986 PP-400-406), Mahadevan (1970 P. 157) and others have made attempts to read the Indus signs with the help of the Proto-Dravidian Etymology. The sustained and painstaking researches of these scholars and their convincing argument to identify the Harappans as the Dravidian have tempted the present author to take a dip into the ocean of their arguments and come out with tremendous enthusiasm and remarkable confidence to follow their foot steps., to the vexed problems of reading the graffiti.

The Dravidians, more particularly the Tamils had their own Script and which may be called Proto - Brahmi or ~~Archaic~~ Pre Tamil Script. It has been built with a combination of three categories of signs viz. (1) Indus Signs (2) Brahmi Letter like signs and (3) Pure graffiti marks. This script was widely used in the Pre - Iron age i.e, earlier than 500 B.C. throughout India including Tamil Nadu (ie. during the pre - Sangam Age). Even the Tamil - Brahmi Script may be called Archaic Tamil Scr

There are nearly 120 graffiti from South India very similar to the Indus signs. A concordance of the Indian graffiti has been prepared, with Photographic illustrations for each and every graffiti.

More than 50 ligatured graffiti with Indus signs alone have been located in Tamil Nadu which attest to the relationship between the Harappan and the Tamils. The Tamils are the ~~descendents~~ of the Harappans. (grand, Grandsons &

A new methodology has been adopted by the author to read the graffiti and decipher the Indus script. The pictographic letters and pictures found in the Proto - historic rock paintings have been utilised for the purpose of identification and assigning values not only to the Indus signs but also to the proto - Brahmi and Brahmi letters. (See Figures)

The painted letters and pictures in painting throw a flood of light on the origin and evolution of the corresponding signs and letters found in the Indus and the Brahmi Scripts.

The earliest script namely Brahmi found in South India seems to have been derived from the Post Harappan Graffiti Tradition as evidenced from the Pre - Iron age rock paintings from Tamil Nadu.

GRAFFITI POTSHERDS OF MANGUDI EXCAVATION WITH SPECIAL REFERENCE TO SEMBIAN KANDIYUR FIND

K. Sridaran

Mangudi is a small village situated on the banks of river Deviyaru in Tirunelveli district, Tamil Nadu state. The excavation conducted in the year 2001 - 2002 had yielded microlithic, Megalithic artifacts belonging to the pre-Historic and Historic periods. The excavation was carried out in the ancient mounds called as Nayakkar Punjai and Linga Thidel (Avudaiyapuram) located 2 Kms east of Mangudi village.

The antiquity of the village can be traced to the microlithic period. The Microlithic tools and fragments were discovered on the banks of the river Deviyaru and in the excavation sites. Microlithis were also callected in the neighbouring places like Puttur and Manatheri (Teri sites). Microlithis found in the stratified layers below the megalithic cultural phase. The excavation showed a clear stratigraphy for the microlithic cultural phase. It can be assumed that after the microlithic phase, the area was not occupied for sometime. And later on the megalithic people occupied this area.

A broken piece of a neolithic celt was also found at a depth of 1.35 mts (from a pit) in the excavation.

Period II (Early Historical Period 300 B.C to 300 A.D) represented by the early Historical culture. Black and red ware, black ware, red slipped ware were predominant varieties found here. A good number of graffiti marks especially on the black and red ware sherds were found. About 200 sherds with graffiti were collected from mangudi excavation. The markings were usually made on the exterior after firing. They were engraved mostly on the shoulder portion of the pots. Some of the markings were found also in between the rim and the base. On some jars, cups and plates they are found at the bottom.

The symbols can be classified into single and multiple graffiti. The study of these graffiti can be analised on the basis if their gradual development. The graffiti marks from Mangudi have much in common with their counter parts in other sites of Tamil Nadu. Single symbols are with various forms. single line, two obligue lines joining at the top, arrow head like forms, curved lines, Brahmi 'ma' like symbols, double arrow heads are some of the symbols found at Mangudi. The multi symbols include two arrow heads placed side by side with a hook like form, arrow head like form intersection at the bottom, oblique like (with X mark and vertical lines) worth to be mentioned from Mangudi graffiti.

The Sembian Kandiyur Neolithic celt has four incised signs similar to Indus symbols. The similarity between Graffiti marks and Indus symbols have been studied in detail by the scholars like I. Mahadevan Dr. B.B. Lal and Dr. S. Grumurthy. The first sign found on the celt look like a seated man (symbol No: 48) frequently occur in Indus seals. The other two symbols are also found in the pot sherds from the excavation like sanur, Sulur and Vallam. In addition the findings of pot sherds with graffiti marks from the excavations like Adichanallur, Kodumanal, Karur, Korkai, Modur and other places show the similarity between graffiti marks and Indus signs. Rock art sites like Kilvalai (Villupuram District) Maharaja kadai (Krishnagiri district) also show paintings and geometrical designs similar to Indus signs.

Further comparative study of all Graffiti marks found from the excavations conducted in Tamil Nadu would throw more light on the study of Indus signs. The Neolithic celt found at Sembian Kandiyur has also created an awarness to study the Neolithic tools in detail and also the graffitti found in the excavations.

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செம்பியன் கண்டியூர்க் கீறல் குறியீடுகள்

முனைவர் தி. சுப்பிரமணியன்

காவிரிக்கரையில் அமைந்துள்ள செம்பியன் கண்டியூர், தொல்பழங் காலம் தொட்டுச் சிறப்புற்ற நகரமாகத் திகழ்ந்துள்ளது. சோழர்களின் காலம் வரை சிறப்புற்று விளங்கிய இந்த நகரம் தற்போது மண்மேடாகக் காணப்படுகின்றது. சுமார் 30 ஏக்கர் பரப்பளவில் காணப்படும் இந்த மண்மேடு 1 மீட்டர் உயரமுடையது. இந்த மண் மேட்டில் வாழ்விடம் ஒரு பகுதியிலும், தாழி வகையைச் சார்ந்த ஈமச்சின்னங்கள் ஒரு பகுதியிலும் காணப்படுகின்றன. ஊர் இருக்கைப்பகுதி ''கோட்டைமேடு, அம்மன் கோயில் மேடு'' என்ற பெயர்களில் காணப்படுகின்றது. தாழி வகையைச் சார்ந்த ஈமச்சின்னங்கள் உள்ள பகுதி ''தோப்புமேடு'' என்று அழைக்கப்படுகின்றது.

ஊர் இருக்கைப் பகுதியில் பெருங்கற்கால ஓடுகளான கருப்பு – சிவப்பு ஓடுகள், கருப்பு ஓடுகள் மற்றும் சிவப்புநிற ஓடுகள் ஆகியன மேற்பரப்பாய்வில் அதிக அளவில் காணப்படுகின்றன. வரலாற்றுக் காலத்தைச் சார்ந்த சுடுமண் குழாய்கள், வட்டச் சில்லுகள், அகல் போன்றவை சேகரிக்கப்பட்டன. தோப்புமேட்டில் தாழியின் உடைந்த ஓடுகள் அதிக அளவில் உள்ளன. இவற்றுடன் கருப்புசிவப்பு மட்கலங் களின் ஓடுகள் மெல்லியதும், தடித்தும் ஆகிய இரண்டு வகையான ஓடுகள் கலந்து காணப்படுகின்றன.

தோப்புமேட்டில் தண்ணீர் விழுகின்ற இடத்தில் ஒரு தாழி உடைந்த நிலையில் இருப்பது தெரியவந்தது. அங்கிருந்த தண்ணீர் அகற்றப்பட்டதால் தாழியின் பகுதிகள் உடைந்திருப்பதைக் காணமுடிந்தது. இதைப் போன்று பல தாழிகள் இப்பகுதியில் இருப்பதும் தெரிய வந்தது.

தாழி

தாழியின் உடைந்த அடிப்பகுதி தரையின் கீழ்ப்பகுதியில் புதைந்திருந்தது. இதன் அருகில் சிகப்புநிறப் பானை ஒன்றும் இருந்தது. இதைப்போன்று பல மட்கலங்கள் தாழியின் அருகில் இருந்தன. இந்தச் சிவப்புநிறப் பானை மட்டும் தனியாக எடுக்கப்பட்டது. ஆனால் வெளியில் எடுத்தவுடன் அது உடைந்துவிட்டது. படையல் பொருளாக வைக்கப்பட்டிருந்த இந்த பானையின் உட்பகுதியில் 9 மட்கலங்கள்

இருந்தன. இவற்றில் சில நல்ல நிலையிலும், சில உடைந்த நிலையிலும் இருந்தன. இவை சுத்தம் செய்து வெளியில் எடுக்கப்பட்டன. இதில் கிண்ணம், மூடிகள், செப்புகள் ஆகியன அடங்கும். கிடைத்த 9 மட்கலங்களில் 6 மட்கலங்கள் கருப்பு சிவப்பு மட்கல வகையைச் சார்ந்தவை. மற்றவை சிவப்புநிற மட்கலங்களாகும். இந்த மட்கலங்களைச் சுத்தம் செய்தபோது இதன் வெளிப்பகுதியில் கீறல்குறியீடுகள் இருப்பது தெரிய வந்தது.

குறியீடுகள்

தாழியின் படையல் பொருட்களாக வைக்கப்பட்ட 7 மட்கலங்களில் குறியீடுகள் காணப்படுகின்றன. இக்குறியீடுகள் சுட்ட பின்னர் கீறிச் செய்யப்பட்டவை. இந்த கீறல் குறியீடுகள் சிலவற்றில் ஆழமாகவும், சிலவற்றில் ஆழமின்றியும் காணப்படுகின்றன. பெரும்பாலான குறியீடுகள் கருப்பு சிவப்பு மட்கலங்களில் உள்ளன என்பது குறிப்பிடத்தக்கது. தாழியுடன் படையல் பொருளாக வைக்கப்பட்ட வற்றிலுள்ள குறியீடுகளில் மூன்று வகைகள் காணப்படுகின்றன. அவையாவன:-

1. முதல் வகை : 
2. இரண்டாம் வகை : 
3. மூன்றாம் வகை : 

கீறல் குறியீடுகளைப் பற்றிய பல ஆய்வுகள் இதுவரை வெளிவந்துள்ளன. 1881-ல் பிரான்பில் என்பவர் குறியீடுகள் எதையோ கூறுகின்றன என்று ஆய்வைத் தொடங்கி வைத்தார்.[1] இதைத் தொடர்ந்து ஜி. எஜ்தானி, பி.கே. தாபர், பி.பி. லால் ஆகியோர் இக்குறியீடுகளின் தோற்றம், வளர்ச்சி, குறியீடுகளுக்கு இடைப்பட்ட தொடர்பு ஆகியவற்றை ஆய்வு செய்தனர்.[2] 1961ல் யஜ்தானி பெருங்கற்படை சின்னங்களில் கிடைத்த குறியீடுகளைத் தொகுத்து வகைப்படுத்தி 131 வகையான குறியீடுகள் கிடைத்துள்ளன என்று கூறினார்[3].

பி.பி. லால் சிந்துவெளி பண்பாட்டில் கிடைக்கின்ற முத்திரைகளுடன் தொடர்புபடுத்திக் கூறியுள்ளார். இக்குறியிடுகளை 61 வகையாகப் பிரித்து இவற்றில் 47 குறியீடுகள் சிந்துவெளி நாகரிகத்துடன் தொடர்புடையன என்று கருத்து தெரிவித்துள்ளார். இந்த ஆய்வைத் தொடர்ந்த சேஷாத்திரி அகழாய்வில் கிடைத்த குறியீடுகளை 156 வகைகளாக பிரித்திருப்பதாகக் குறிப்பிட்டுள்ளார்.

ஏ. சுந்தரா, பெருங்கற்படை மற்றும் வாழ்விடங்களில் செய்யப்பட்ட அகழாய்வுகளில் கிடைக்கின்ற குறியீடுகள் சிந்துவெளிப் பண்பாட்டிற்கும், பெருங்கற்படை பண்பாட்டிற்கும் இடைப்பட்ட காலத்தில் அதாவது கி.மு. 2000க்கும் 1000க்கும் இடைப்பட்ட காலத்தில் இருந்திருக்க வேண்டும் என்றும், இத்தகைய

குறியீடுகள், பிற்காலத்தில் பிராமி எழுத்துக்களாக வளர்ச்சியடைந்தன என்றும் கருத்துத் தெரிவித்துள்ளார்.[4]

தமிழகத்தில் பல அகழாய்வுகளில் கீறல்குறியீடுகள் கிடைத்துள்ளன. இவற்றில் கரூர், உறையூர், அழகன்குளம், வல்லம், கொடுமணல் போன்றன குறிப்பிடத்தக்கன. வல்லம் அகழாய்வில் கீழ்ப்பகுதியில் (முதல் மண் அடுக்கில்) குறியீடுகள் பொறித்த பானை ஓடுகளும், இரண்டாம் மண் அடுக்கில் தமிழ்பிராமி எழுத்துக்கள் பொறித்தவையும் கிடைக்கின்றன. தமிழ்பிராமி எழுத்துப் பொறிப்புகளைக் கொண்ட பானை ஓடுகள் கிடைத்த பின்னர் கீறல் குறியீடுகள் பானை ஓடுகளில் குறைந்துள்ளன. இதனால் குறியீடுகளில் இருந்து தமிழ்பிராமி வளர்ச்சி அடைந்துள்ளது என்று கூற முடிகின்றது.[5]

குறியீடுகளின் தோற்றம் பற்றி ஆய்வாளர்களிடையே கருத்து வேறுபாடுகள் காணப்படுகின்றன. குறியீடுகளின் தோற்றம் மற்றும் அமைப்பு ஆகியவற்றைக் கொண்டு 1. பானை செய்வோரின் சின்னம் 2. பானை உரிமையாளரின் சின்னம், 3. குலக்குறியீடுகள் ஆகிய மூன்று வகையான கருதுகோள்கள் முன்வைக்கப் பட்டுள்ளன.[6]

பெருங்கற்காலச் சின்னங்களில் ஒன்று அல்லது அதற்கு மேற்பட்டவர்களின் எலும்புகள் கிடைத்துள்ளன. சில குறிப்பிட்ட பெருங்கற்படை சின்னத்தில் ஒரு குறிப்பிட்ட குறியீடு மட்டும் இருப்பது தெரிய வருகின்றது. உதாரணமாக கொடுமணல் பெருங்கற்படை சின்னம் 2லும் மற்றும் 3லும் தனித்தனி வகையான குறியீடுகள் மட்டும் இருப்பது குறிப்பிடத்தக்கது. இக்குறியீடுகள் படையல் பொருட்களாக வைக்கப்பட்ட அனைத்து மட்கலங்களிலும் ஒரே அமைப்பில் கீறப்பட்டுள்ளன. கொடுமணல் அகழாய்வில் பெருங்கற்படைச் சின்னங்களில் கீழ்க்கண்ட குறியீடுகள் மட்டும் கிடைக்கின்றன.

பெருங்கற்படைச் சின்னம் - 2 

பெருங்கற்படைச்சின்னம் - 3 

வாழ்விடங்களில் கிடைக்கின்ற குறியீடுகள் இத்தகைய அமைப்பில் காணப்படவில்லை. எனவே வாழ்விடங்கள் அல்லது ஊர் இருக்கையிலிருந்து கொண்டு வரப்பட்ட பின்னர் மட்கலங்களில் இத்தகைய குறியீடுகளைக் கீறிய பின்னர் படையல் பொருட்களாக வைத்திருக்கின்றனர் என்பது தெளிவாகத் தெரிகின்றது. எனவே இக்குறியீடுகளை ஒரு குலக்குறியாகக் கொள்ளலாம். பெருங்கற்படை எண் 3,7,8,10,15 ஆகியவற்றில் ஒரே மாதிரியான குறியீடு காணப்படுகின்றது. 5,9 ஆகிய இரண்டு பெருங்கற்படையில் உள்ள குறியீடுகள் ஒரே மாதிரி காணப்படுகின்றது எனவே இதை ஒரு கூட்டம் அல்லது குலத்தைச் சார்ந்தவர்களுக்கு எடுக்கப் பட்டதாகக் கொண்டால் ஏற்புடையதாக அமையும்.[7]

பெருங்கற்படைச் சின்னம் - 3, 7, 8, 10, 15 - 

பெருங்கற்படைச்சின்னம் - 5, 9- 

செம்பியன் கண்டியூரில் கிடைக்கின்ற மூன்று வகையான குறியீடுகளில் முதல்வகைக் குறியீடுகள் அதிக அளவிலும், மற்றவை ஒவ்வொன்றாகவும் காணப்படுகின்ற காரணத்தால் இதையும் குலக்குறியாகக் கொள்ளலாம். இனி வருங்காலங்களில் செய்யப்படுகின்ற பெருங்கற்படை சின்னங்களில் கிடைக்கின்ற குறியீடுகளை முறையாக வகைப்படுத்தியும், முறையாகப் பதிந்தும் ஆய்வு மேற்கொண்டால் இதன் உண்மைத் தன்மையைத் தெரிந்துக் கொள்ள இயலும்.

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INDUS SCRIPT ATTESTED IN THE NILGIRIS OF TAMILNADU

Dr. C. Maheswaran

I. Introduction

Indus script are attested away, from the Indus Valley sites as well. Scholars who work on ancient script get intrigued to observe that the Indus script are found attested in various parts of Indian subcontinent, including the southern most part, viz, Tamil Nadu. Several scholars have identified stray symbols analogous to the Indus script from rock art sites, walls and floors or habitats, tattoo marks, ethic designs, occupational markings in and around Bihar, Gujarat, and Tamilnadu.

In this paper, an attempt is made to highlight the stray symbols analogous to the Indus script that have so far been not identified and reported from the Nilgiris of Tamilnadu.

II. Indus Script attested away from Indus Valley sites : An overview

N.K. Verma (1990), an officer of the Bihar Administrative service has identified Indus Script at the wall paintings and floor drawings of Santhal tribal hamlets in and around Bihar.

R. Madhivanan (2003), Director (Rtd.), Tamil Etymology Dictionary project, Government of Tamilnadu has identified the Indus script in the tatoo marks from the forearms of sindhi people of Ranu of Kutch, Gujarat and Baduga people of the Nilgiris, Tamilnadu. Further, he has identified the stray symbols analogous to the Indus script among the markings of various occupational groups such as potters, washermen, carpenters. Not only that, he has identified the Indus scripts in the rock art sites of Tamilnadu in and around Thindivanam of Villupuram - following the footsteps of P.L. Samy (1984), an Indian Administrative Officer belonging to the Union Territory of Puducherry. R. Madhivanan, thus, had

identified stray symbols analogous to the Indus Script from the rock art sites located at Keezhvalai, Perumukkal, Alambadi, Sethavarai, Kulirsunai. He has further identified stray symbols analogous to the Indus script from floor drawings of Tamilnadu. Kaveripattinam Duraisamy, along with R. Madhivanan (2003) has identified Indus script from rock art sites of Dharmapuri and Krishnagiri Districts.

III. Recent Studies of Indus Script from the Nilgiris

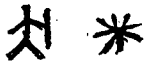
The author of this paper has identified stray symbols analogous to the Indus Script from the rock art sites of Vellarikkombai and Iduhatti (both located within the Kotagiri Taluk of the Nilgiris). He had identified the Indus script (as so-called geometric motifs) on the fore arms of the Toda womenfolk. His field studies have revealed that the *Putkuli,* the embroidered mantle of clothe (which forms an ethnic indicator of the Todas) is with full of so-called geometric motifs which inturn have derived their blue print from that of the tattoo marks of the Todas.

Let has have close look at the Indus script attested and indentified from the Nilgiris of Tamilnadu.

3.1 Rock Art Sites: As Sources of Indus Script:

In the Nilgiris, the rock art sites are indentified from Vellarikkombai, Iduhatti, Konavakkari, Sigur. Of them, Vellarikkombai and Iduhatti are observed to possess stray symbols analogus to the Indus script.

At Vellarikkombai, a Kurumba hamlet located is the Kotagiri-Udhagamandalam road-left side of Maamaram a hillock with rock art depictions of petrographic representations in red is identified. The indigenous Kuramba tribal community refers this hillock as *ezhuthu bare* (where as the Irulas of Sundapatti, a near by tribal hamlet designate this hillock as *ezhuththu vare* and the Adi Dravidas of Maamaram call it by the name *ezhuththu paare*). The author of this paper has identified, two stray symbols analogous to the Indus script.

From Iduhatti, (another rock art site of the Nilgiris) which is situated nearby Pikkapathy mund, (a Toda hamlet) the author of this paper has identified a couple of stray symbols analogous to the Indus script, viz., 

It is worthy to mention here that this rock art site is designated by the local people as *thodhavan paare* and the Todas are in the habit of keeping at rest the corpse of their deceased kin at this site, enroute to the graveyard.

3.2 Tattoos: As Sources of Indus Script

Toda womenfolk in the late fortys are identified with tattoo markings on their fore arms. Although these tottoo markings appears to be typical geometric motifs for a casual look, closer studies reveal that they are conglomerations of stray symbols akin to that of the Indus script. As cited earlier, R. Madhivanan has identified the Indus scripts from the tattoos of the Baduga womenfolk in the Nilgiris.

3.3 Putkuli: As Sources of Indus Script

One of the ethnic indicators of the Todas is the *putkuli,* an embroidered mantle of cloth worn by both the sexes, irrespective of the age variations. Toda womenfolk are in the habit of engage themselves in embroidery. By counting the interspace between the yarns they carry out the indigenous embroidery, employing chiefly woolen threads of black & red (and quite rarely with other colours such as blue, green) and a needle. The moifs were conceived as geometric ones. Contrary to this general widespread belief, the author of this paper has identified that the blue print of the *putkuli* designs were derived from the tatoo marks themselves. For instance, he could indentify the following stray symbols, analgous to the Indus script from the *putkuli* designs: 

VI Conclusion

From the aforementioned discussions, we could infer that the Nilgiris of Tamilnadu is a store house of stray symbols analogous to the Indus script as evidenced from the rock art sites of Vellarikkombai and Iduhatti, the tattoos of the Toda womenfolk (& the Baduga womenfolk) and the *putkuli* of the Todas. And these stray symbols analogous to the Indus script exist as part and parcel of the cultural heritage of the indigenous people of the Nilgiris though the indigenous communities, concerned were inaware of the reality.

The author of this paper wants to emphasize that the occurrence of such stray symbols akin to that of the Indus script connot be ignored or side lined as

evidences of impropablities since chalcolithic artefacts such as 'copper antennal swords' are also identifind from Coimbatore in the same provenance of western Tamilnadu, (apart from that of Appukkal of vellore District, Sarinippatti near Minnalkudi of Ramanathapuram District). Indus script as graffiti which are attested in abundance from Kodumanal, (another site in the same area of western Tamilnadu) could reiterate the point that the attestation of Indus script in the Nilgiris do have a bearing and connectivity in the protohistoric map of Tamilnadu.

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HARAPPA CULTURE AND LANGUAGE LINKS

R.D. Thulasi Brinda

Art has always been a basic activity in human life, in fact it is considered more cohesive and permeating in human relationships than even language, for it can penetrate the normal barriers to communication.

The rise of a convenient form of writing is the mark of civilized man. Writing enables man to accumulate and use the experience and discoveries of past generations. If the system of writing is cumbrous and difficult, knowledge becomes the monopoly of a small class of people. Visual symbols are used in writing as like the spoken words in speech. Writing is therefore, highly symbolic and its origin corresponds to symbolic art and thought. In ancient times complicated writing was mastered by priests who naturally dominated the political life of the state. This happened in countries like ancient Egypt, Sumeria and China.

The term, "Rock Art" is relatively new and its coining has its own justification. The term quite reasonably broadens the boundaries of earlier terms like 'Prehistoric Art' or 'Primitive Cave Painting' by shedding their chronological connotations but at the same time confines its limit only to rock paintings and engravings and excludes movable objects of art such as sculptures, ornaments and engraved tools.

The author of this paper identified a Rock Art site in Periyakottapalli village of Krishnagiri District in Tamil Nadu. This paper will deal with the script and symbols found in this site. This village is about 10 Kms from Krishnagiri. Here on the lower surface of a rock (which form the ceiling of a rock shelter) I found lots of symbols and signs (art or drawings). I was also excited to see that some of the signs or symbols were similar to the symbols found on the seals and sealings of Mohenjodaro and Harappa of Indus.

All the drawings (signs and symbols) here are in white ochure. They are seen as line drawings. Some are thin lines and some are very thick. Many geo-

metrical figures, human figure as standing, dancing and riding on animal, trees (foliage) and various symbols like huts, lamps *(Pandil vilaku)*, stars, fish, traps, *trishul*, etc are seen in this Rock Art site.

In this Rock Art site, the earlier Rock Art has been superimposed on those underneath, leaving a confused tangle of images that it takes a lot of time to sort them out into separate individual figures. Moreover the underlying and overlapping paintings are distinguished due to the difference in the shade of colour or in style or both. The underlying paintings are in lighter shade than the others. Therefore it can be understood that those that have dark shade are younger and belong to a later period than the light shaded symbols and script.

Rock Art could be an emotional expression. The people who created this art want to express the things they have seen or liked most. Their imagination and experience both work at a time. The object, which they have never found or never heard cannot be the subject of their drawings. L.R.Leech classified the purpose of primitive art into three groups as (1) those serving the religious, magical or ceremonial purposes, (2) those associated with the decoration of personal belongings, (3) those found with the memorials of the dead.

Art is to writing as thought is to speech. Like art, writing is also a way of communication. Writing is immensely important in the cultural history of mankind as it supplemented the memory by storing different incidences of nature and passing them down through ages. Writing can keep all the knowledge alive for the benefit of others, irrespective of time and space. Therefore, we should be grateful to art which helped writing to evolve out as a progressive conventionalization of 'representative' art forms. It was possible as the artist shifted their aim and became more concerned to portray the meaning of an object than the image of the object.

I would like to mention about another Rock Art site - Andimalai of this district. This site has been identified by Dr. Mathivanan and (late) Mr. Duraisamy. Some script and symbols here are similar to that of Periyakottapalli site. Here also many scripts and symbols are found on one rock.

Indus Culture

During the third millennium B.C. a highly developed civilization, known as the Harappan Civilization or the Indus Civilization was born. Many Harappan sites have been known and excavated.

The authorship of Indus civilization was a riddle. Various theories have been put forward by the different scholars. Some have traced a Sumerian origin and have called this as a Indo-Sumerian civilization. But some have assigned this as a Dravidian origin, while few have said that, "it was not created by any particular race. It was rather a creation of different races living and working together in a particular environment". But Sir John Marshall[1] and Sir Mortimer Wheeler[2] were convinced that the Indus Valley Civilization was only Dravidian and that its script also Dravidian.

The latest emerging views in the field of historical linguistics supports the model of northward and westward ascent of the Dravidians, which was held by Father Heras, V.R. Ramachandra Dikshitar, Maraimalai Adigal and G. Devaneya Pavanar. Prof Dr.R. Mathivanan has proved that Indus script is Dravidian by making a detailed research work. This Professor has read the inscriptions of Indus Valley seals as mainly Tamil proper names congruent with those in the ancient Tamil literature and some with unusual Tamil proper names found in use now.

As a Museum Curator, by my field work and research studies, I have few evidences to prove the fact that Indus valley civilization had its origin in the south and that the remnants of the Indus culture in all aspects of life including the language are still prevailing in many parts of Tamil Nadu, especially Krishnagiri District.

I had to take a tour to study about the socio-cultural life of the primitive tribes, Irulars of Krishnagiri district. I went to the hilly areas of Thalli, Anchetty areas of Denkanikottai region of this district. The Irular tribes of Kottaiyur live in thick forest and speak Tamil. These tribes use the Indus signs even now. I was excited to see the (script) symbol on their musical instrument *(Drum-thambattam)*. I wanted to record their traditional folk songs and dance. So they brought their musical instruments and began their dance and songs. After recording, I wanted to collect few tribal objects from them for the museum. So I asked them to give me the drum on which I found the Indus symbol (script) with exchange of money. But they refused to give me that drum but instead gave me another one in which there was no symbol. When asked about it they said that it is concerned with religious sentiment and they will use it only for holy purpose. When I asked about the meaning of that symbol they did not know. They just said, "our ancestors have written this and we are continuing it". They did not permit even to take a photograph of that particular musical instrument.

Not only this, I also found the symbol  with *vibhudhi* on the vessels, pots (bottle gourd) of their daily use among the Irular tribes. Since they use these pots for honey collection, they apply these signs on them. I got one pot from them and included in our museum collection.

In another field study with Dr. Maheswaran[3] about the socio-cultural aspects of the *Boom-boom Maadu* people of Dharmapuri and Krishnagiri districts, we were able to see some of the Indus symbols on the cows *(maadu).* They are people who move from place to place and speak Tamil language. So from these field studies, it is proved that the Indus culture is still continuing in all parts of Tamil Nadu especially this district.

In this district, the *Pongal* festival is celebrated in a grant manner in all villages in the month of January. The villagers clean their houses, white wash fully and decorate them. On the next day they celebrate *Maattu pongal.* On this day they draw human figures  with *manjal,* (turmeric powder) on the walls of their houses which has been white washed. The colour of that figure becomes red. Then they leave this symbol as it is till they white wash again in February for *Sivarathiri* festival. The people consider that this figure will ward off the evil spirit which may enter their house. This is again a continuity of Indus culture because this symbol is also seen in the rock art sites of this district.

Not only the villagers, all the Hindus mark the Indus signs on the door frames and doors as auspicious mark. The symbols used are  include swastic. Dots and straight lines are widely used in the pre-indus script stage which goes back to the period of 7000 B.C.- 5800 B.C. The findings at Mehrgarh support this view. Such signs are seen in large numbers in the Mehrgarh seals and inscriptions[4].

The Hindus draw *kolams* with white and colour powder in front of their houses and even on the floor inside the rooms. Many Indus signs are drawn as *kolams.* This is again by tradition.

The washermen still use the Indus signs as identification marks on the clothes given for washing. Dharmapuri and Krishnagiri districts have many folk artist of street drama. These artists draw Indus symbols, on their fore head as auspicious symbols. All these denote the unbroken cultural continuity of Dravidians.

Thus, 'Symbolism' has played a crucial role in India for it became a universal communicable medium through its vivid imagery. A symbol can contain several shades and levels of ideas. Every image was a symbol. The world of symbolism is too vast for description here. I will describe few important ones for it belongs to all time. The ancients devised this method to preserve the truths, valuable lessons, thoughts worthy of being immortalized. Let us begin with the geometrical figures. The Absolute, with no beginning or end, homogeneity, uniformity is represented by a circle, a circle with a center is consciousness, a circle bisected by a diameter is duality in manifestation; swastika, cosmic activity, which is regarded as a very auspicious symbol, etc.

The real meaning of the Swastika is nothing but the Tamil word 'om'. It was once actually a word in the ancient inscription of the Indus Valley script and in Tamil language, 'om' means to protect. [5]

The symbols found on ancient potteries were considered to be graffiti marks. I was able to find some of the symbols (script) found in the Periyakottapalli Rock Art site were seen on the pot sherds that has been excavated from Adichanallur and they are in the collection of Government Museum, Madras now. Similarly I also found that some script or signs found here are also seen on a pot sherd that has been excavated from Gujarat (Harappan site). So by these studies, it is proved that the geographical distribution of the Indus civilization and script has touched all parts of India.

By making a comparative study of graffiti marks with the Indus signs found on seals and sealings of Harappa and Mohenjodaro, it has been discovered that the ancient potters have used Indus signs not only as identification marks but also as syllabic type of writing. On many of the pot sherds proper names are seen in the syllabic type of writing system followed by the Indus Valley people. [6]

Proto- Dravidian, (Tamil) language should have developed with its contact by trade with the people of other old civilizations like the Egypt and Mesopotamia. Many scholars have given evidences to make clear that the Dravidians, before the coming of the Aryans, had an independent and well developed civilization. Their influence extended far and wide and there are conclusive evidences of contact with the Sumerian, Babylonian, Aegean, Etruscan and Egyptian civilizations.

Thus I would like to conclude that from my field studies and with reference to Dr. Mathivanan school of thought, that the Indus people were the Tamils and the language spoken by them was Tamil. The language was written in syllabic type of script from left to right. The name of the writing system was *Kanneluttu*

and *Koleluttu*. Indus script had progressed beyond the stage of pictograph switching over to syllabic script which prevailed for a long time.

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KANDIYUR CELT WITH SARASVATI HIEROGLYPHS AND BHARATAM CIVILIZATION STUDIES

S. Kalyanaraman

Kandiyur celt with Sarasvati hieroglyphs connoting the repertoire of a smithy using kan.d. 'furnace' points to the need for researches related to a Kaveri joining Narmada and a Kaveri joining Amaravati river near Karur (Tiruchy).

Tamil Nadu State Department of Archaeolgy reported the discovery, at Sembiyan Kandiyur, of a stone celt with epigraphs. It is surmised that the tool may belong to the post-neolithic and pre-iron-age (2000 to 1000 BCE).

The four glyphs occur recurrently and in association with other glyphs which are associated with mint, metallurgy, smithy. Each of these glyphs (also called 'signs') will be reviewed in the context of epigraphs where they occur.

Sign 47 : That this glyph connotes the ribs of the backbone is established in I. Mahadevan *(in* the Indus Script) Late Harappan Period at Kalibangan, the comparative glyph is a large-sized graffiti on pottery (See Fig.4 in the plate of Fig. 1-9). http://www.varalaaru.com/De jult.asp?articleid 194 Figure 6 is a pottery graffiti found in a megalithic burial at Sanur in Tamil nadu of circa 1st millennium BCE, from B.B. Lal, Pl. XXXI B-I(Megalithic) symbol No 47 The symbol also occurs in Pl. IIIA-1,3 and Pl. XXX B-1. Lal compares the Indus sign and the Megalithic symbol (Pl. XXXI B) and notes: "In the case of Sanur (rare examples elsewhere also) three symbols occur in such close proximity to one another as to give the impression of a record. It may however be added that the three symbols interchange their positions on different pots producing all possible combinations" (Lal B.B. 1960. From Megalithic to the Harappa: tracing back the graffiti on pottery. *Ancient India,* 16, pp. 4-24). "An exceptional variant of Sign 48 is found deeply incised (pre-firing) on the concave inner surface of a shallow terracotta dish (Fig.8). This variant depicts the deity with a large head

and the backbone with four ribs 'inside the body'... A unique seal, probably Late Harappan, found on the surface at Kalibangan, depicts a seated skeletal deity occupying the entire field (Fig.9). This pictorial representation may thus be classified as the `field symbol' equivalent of Sign 48. The deity is facing right (in the original seat), leaning forward. He has a large head and a massive jaw jutting forward. The complete ribcage is shown in clear detail with almost all the ribs in position, carving naturalistically on either side of the backbone. The deity appears to be holding a ladle (?) in his right hand. His knees are drawn up and he seems to be squatting on his haunches... The details are clearly visible in the highly enlarged photograph of the seal published in Swami Oarnanda Saraswati 1975, Ancient Seals of *Haryana (in* Hindi). Rohtak.Pl. 275." (I. Mahadevan, ibid.)

barad.o - spine; backbone; the back; barad.o that bad. avo lit. to strike on the backbone or back; hence, to encourage; barad.o bha re thato lit. to have a painful backbone, i.e. to do something which will call for a severe beating (G.lex.) barad., barad.u = barren, childless; baran.t.u leanness (Tu.tex.) *man. uk.o* a single vertebra of the back (G.) baradh -- PunjabiError! **Bookmark not defined.) --** both connote a mason, with an early phonetic form: ***bard.a** *which* gets 'refined' (hypersanskritized) into Sam.skr.tam as vardhaka. [semantic: cutting , dividing, cutting off, shearing; a carpenter (Ra ma_yan.aError! **Bookmark not** defined.); cf. homonym: vr.dh = exhilarate (esp. the gods , with praise or sacrifice) RV.~ cf. bharad.o, 'devotee of S'iva (Gujarati); vr.dhat elevate , raise to power , cause to prosper or thrive AV, SBr. MBh. ; to exalt magnify, glorify (esp. the gods) (Skt.). A superb example of the evolution of a few Sanskrit words from the substratum Meluhhan or indic, since the words find their echoes in almost all languages of Bha-rata. **bal.ad** ~ an ox; a bullock; a bull (G.lex.) baredi = herdsman (H); baldi -- - oxherd (P.); baldiya - cattle-dealer (Ku.)(CDIAL 9177). balivarda - ox, bull (TBr.); baleda , baled = herd of bullocks (L.); baledo (S.); bald, baldh, bathd - ox; baled, baleda = herd of oxen (P.); bahid, bale de ox (P.); balad, bald = ox (Ku.); **barad** (N.); balad(h) (A.); balad (B.); bal.ada (Or.); **barad(h)** (Bi.); barad (Mth.); barad (Bboj.);. bardhu (Aw.); balad, barad(h), bardha (whence **baladna** - to bull a cow (H.); bal.ad (G.)(CDIAL 9176). **ko-lermm** - the backbone (Te.lex.) kolhe'smelters of iron'; **komili** a furnace; kolimi-titti = bellows used for a furnace. Tel lex.

Sign 342 : The most frequently occurring sign is Sign 342 with over 1395 occurrences **kanka** = rim of pot (Santali) Rebus: **kan:ka** = a metal (Pali); kan- = Copper (Ta.) **kanaka** = gold; kanaka dhyaks.a ~ superintendent of gold, treasurer (Skt.) **kan-n-a-r,** blacksmiths, coppersmiths (Ta.)

khan.n.a = that which is dug (Pkt.lex.) **khana** - a trench, a pit, a hollow in the ground (Santali.lex.) **[khan** - a mine (Santali) ?kham ~ mine (VarBr.8.); khan.i = mine (Pkt.); khani (A.); khan (H); khan. - mine, quarry (M.)(CDIAL 3813); cf. khana ~ a trench, a pit, a hollow in the ground (Santali.lex.).

Glyph: rim of pot: **kanna** edge, handle, rim (H); ka - nu end of a rope for supporting a burden (N.); **karn.a** = the handle or ear of a vessel (RV 8.72.12; S'Br. 9); the helm or rudder of a ship; **karn.aka** ~ a prominence on handle or projection on the side or sides of a vessel *[kan-* (Santali) < karn.a (RV)I; **karn.akita** ~ having handles, furnished with tendrils (Skt.lex.) karn.a = ear, handle of a vessel (Rv.); end, tip (RV 2.34.3); kan.n.a ear, angle, tip (Patli) (CDIAL 2830). kan.n.aka = having ears or corners (Pali); kan.o = rim, border (S.); **ka_n.a_** brim of a cup (B.)(CDIAL 2831). **kankha, kan:kha, khan:kha** rim of a vessel; khan:kha habic perejme, fill it up to the brim; kan:khi = the rim of a vessel (Santali.tex,) **kaD.d.a kan:kha, kan.d.a kankha** = the rim of a waterpot (Santali.lex.) **kankha, kan:kha** brow of a hill (Santali.lex.) **kan.d.a** = a pot of certain shape and size (Santali) Rebus: **kand.** = altar, furnace (Santali)

Sign 367 : This sign appears on a Chanhudaro bronze tool: Inscription 6306 incised on two sides c04O a,b; the crosshatched oval sign follows the sign three inverted U-s:

The first line of the incription 6306 (which includes the three inverted U signs ligatured one on top of another) is incised on one side of copper tool.

There are many allographs of this sign which is also ligatured (infix) with a crab sign [After Parpola, 1994, fig. 13.15]

Mountain topped by a leaf gets stylized as an important motif. Pro - elamite glyptics. Leaf motif. I -c, After Leg rain, L., 1921, Empreintes de chets elamites, *Mem. Mission Arch. De Perse* 16, Paris: 62-654; d. After Amiet, P., 1961, *La glyptique mesopolamienne archaique,* Paris: 497; Mundigak IV.3; 3. After Casal, J.M., 1961, Fouilles de Mundigak I-II *Mem. Delegation Arch. Franaise en Afthanistan* 17, Paris: fig. 102: 485; f. Early Harappan. Kalibangan. After Sankalia, 1974: 346, fig. 88d, A. H-L; cf, Fig. 23.45 Asko Parpola, 1996, fig. 23.45. Two goats eating from a tree on a mountain top in proto-Elamite seals from Susa [After Amiet, P., 1972, Glyptique susienne I-II, *Mem Delegation Arch. En Iran* 43, Pais: 978 and Legrain, L., 1921, Emprientes de cachets elamites, *Mem. Mission Arch. De Perse* 16, Paris: 3161.

Mohenjo-daro. Copper tablet DK 11307 (SC 63.10/262).

.Mohenjodaro; limestone; Mackay, 1938, p. 344 Pl). LXXXIX:376.

Archer, fig leaf

mO582Am M058r;Bt 3365 Homed Archer?

mO588; Atm 0588Bt Horned archer.

m 540; At 540 Copper tablets (15) Field Symbol

52(6)

me - d.i = glomerous fig tree, ficus racemosa (Ka.); Ficus glomerata (Te.); me r.i (Kol.)(DEDR 5090).

The archer shown on one copper tablet seems to be a synonym of the leaves ligatured with crab on another copper tablet since the inscription on the obverse of each of the tablets is identical, [cf. Parpola. 1994, fig, 13.13) This ligatured sign appears on two seals- one from Harappa and another from Lothal. Leaves ligatured with crab is a sign which occurs on these seals and with similar sign Sequences [cf. Parpola, 1994, fig. 13.12)

The language in which such a synonym can be found is mleccha! Proto-Elharatiya language! kamar.kom ~ fig leaf (Santali.lex.) **kamarmar.a_ (Has.), kamar.kom** (Nag.); the petiole or stalk of a leaf (Mundari.lex.) kama t.hiyo = archer; ka_mat.hum = a bow; ka mad.i_, ka mad.um = a chip of bamboo (G.) kamat.hiyo a bowman; an archer (Skt.lex.) Glyph: *kama-hi , ka mat.hum* a bow (G.); *kamat.ha* a tortoise, a bamboo (Skt,)

lo = nine (Sanali) [Note the count of nine fig leaves on m02961; loa = a species of fig tree, licus glomerata, the fruit of ficus glomerata (Santali.lex.)

loha lut.i = iron utensils and implements (Santali.lex.)

lauha = made of copper or iron (Gr.S'r.); metal Error Bookmark not defined., iron (Skt.); lo_hakara = coppersmith, ironsmith (Pali); lo_ha-ra = blacksmith (Pt.); lohal.a (Or.); lo-ha = metal, esp. copper or bronze (Pali); copper (VS.); loho, lo = metal, ore, iron (Si.)

Sign 2931 :

M0398; 308 Second sign on text 2308 (eye):

Two other examples are on m257a seal, depicting a zebu bull as a field symbol and on inscription which is incised on a Harappan bronze weapon or tool No. 5601. Sign 293 together with Sign 393 occurs on two copper 'daggers' from Harappa (the inscriptions -4901 and 4902 -- we the lists of 'property' items owned).

V393;

h381; 4901 Bronze dagger h380; 4902 Bronze dagger.

kar.a - (Kur.) kat.a-r (P.), kat.ha-ri (Tu.), kat.t.a-ri- = knife (Pkt.) karttr.ka - = knife, dagger (Skt.) mus.-kat.a-ri- = dagger (Gaw.) ka-tr = scissors (L.)(IL 1674)

Signs 245, 246 + variants

kat.ra_, kat.r.a_ = piece of ground enclosed and inhabited, market town, market, suburb (H.); kam.t.i_ = space near a village, ground near a mountain, neighbour- hood (Pkt.); kan.t.a boudary of a village (Skt.); ka- - t.he = arable land near the edge of a hill (M.); ka-t.h border, edge (M.) cf. **kat.ai** shop, bazaar, market (Ta.); **kat.a** market (Ma.)(DEDR 1142).

Glyph: *me - d i* glomerous fig tree, ficus *racemosa* (Ka.); ficus *glomerata* (Te.); me - r.i id. (Ko.)(DEDR 5090). [Thus Io 'iron' + m*e-d i 'iron* implement' may be both phonetic determinants reinforcing the substantive ('iron') indicated by the glyph: 'leaf.] **kumpat.i** = ban:gala = an:ga - ra s'akat.i- = a chafing dish, a portable stove, a goldsmith's portable furnace (Te.lex.)

kumme = a dent, a notch, depression (Te.lex.)

2134.1mage: dome, arc : gumat.a, gumut.a, gumuri, gummat.a, gummut.a a copula or dome (Ka.); ghumat.a (M.);.gummat.a, gummad a dome; a paper lantern; a fire-baloon (H.Te.); **kummat.t.a** arch, vault, arched roof, pinnacle of a pagoda; globe, lantern made of paper (Ta.)(Ka.lex.);

era, er-a = eraka = inave; erako - lu = the iron axle of a carriage (Ka.M.); cf. irasu (Ka.lex.) The glyph could be eruvai = copper (Ta.); ere - a dark-red colour (Ka.)(DEDR 817). **eraka, era, er-a = syn. erka,** copper, weapons (Ka.)

Sign 391 an its ligatures Signs 392 and 393 **ara, ara_** (RV.) = spoke of wheel; **[a_r..i = circle (Ta.Ma.)** a r - battle (Ta.) [a r-a, ar a = suffix to denote one who makes things: kamma r-a, uppa ra = smith, saltmaker (Ka.); a r-r-u = to do, make (Ta.); a re, a reka r-a, a reya = a Mahratta man (KaTe.] a rabrass (Ka.) a rakui t.a (Skt.)

Glyph: tapor 'a hod, cover of a cart' ligatured with a pair of wheels. dohra gad h tapor. Substantive: trapu 'tin' (Skt.) The ligatured glyph may connote a tin-metal-smithy. [lit. tin metal-work fort.]

me n.tc a couple (t u.lex.) mel.ai couple (Kon.lex.)

Rebus: **san:gha d.o, saghad.i_ (G.)** = firepan; **saghad.i_, s'aghad.i** = a pot for holding fire(G.)[cula sagad.i_ portable hearth (G.)] cula sagadi portable hearthError! **Bookmark not defined.** (G.)] **agud.e** - brazier Ju.) **jan:gad.iya_** pl. *military guards who carry government treasury from one place to another* (G.lex.) **sangha_d.o (G.)** = cutting stone, gilding; san:gatara s'u = stone cutter; san:gatara - s'i = stone-cutting; san:gsa - ru karan.u = to stone (S.), can:katam = to scrape (Ta.), san:kad.a (Tu.), san:kat - am = to scrape (Skt.) **san:gad.a** = two; san:gad.am double-canoe (Ta.); jan:gala (Tu.); san:gala pair; han:gula, an:gula double canoe, raft (Si.)(CDAL, 12859). **san:gad.i** = joined **animals (M.)sagad.i_,saghad.i** a pan to hold live coal members; a fire-pan; a portable iron grate (G.) **san:gha-d.iyo** worker on a lathe; **san:gha_d.o** a lathe (G.)

kumpat.i - bangala - aniga ra s'akat.i = a chafing dish, a portable stove, a goldsmith's portable furnace (Te.lex.)

kumme = a dent, a notch, depression (Te.lex.)

2134.1mage. dome arch: gumat.a, gurnut.a, gumuri, gummat.a, gummut,a a copula or dome (Ka.); ghumat.a (M.); gummat.a, gummad a dome; a paper lantern; a fire-baloon (H.Te.); **kummat.t.a** arch, vault, arched roof, pinnacle of a pagoda; globe, lantern made of paper (Ta.)(Ka.lex.); **kumpat.i** - ban:gala - an:ga ra s'akat.i_ - a chafing dish, a portable stove, a goldsmith's portable furnace (Te.lex.)

Kaveri, Sarasvati in a riverine-maritime tradition

Investigation to be made whether the present-day Kaveri people moved northwards towards Narmada and linked up with the Sarasvati people in the north-west Bharatam, building up a riverine-maritime civilization of an extraordinary expanse and scope unparalleled by any comparable civilization of the times. The contacts with Central Asia and with Iraq (Mesopotamia) have also been well documented. We have to document the cultural interactions along the 63000 m, long Indian Ocean Rim from pre-historic times. We also have to document the contributions made by kula, jaati and janajaati to the ethos, traditions of Bharatiya civilization and enrichment of cultural contacts with the people extending from the Himalayan ranges to the Indian Ocean Rim as a riverine-maritime pilgrims' progress through millennia.

Amaravati River (called Aanporunai in Sangam times) joins the Kaveri at Tirumukkudalur near Karur, where Sangam Age (Chera kings) punch-marked coins with Sarasvati hieroglyphs such as elephant, tree, bow were discovered.

Kamboja-Sarasvati-Kamboja

Kamboja is an ancient janapada of northwestern Bharat. Kamboja is also associated with Cambodia, a nation on the Indian Ocean Rim. The link between the two Kamboja's seems to be the River Sarasvati and the neolithic civilization on Kaveri river basins - two Kaveri's, one near Narmada and the other near Kandiyur.

Kambavati or Kambhavati or Khambavati (-vati *means residence, pura)* has also been connected with the Kamboj as. Kambavati or Kambhavati is Khambat (the gulf north of Surat) referred to in English as Cambay.

Khambat is attested as a hieroglyph on Sarasvati epigraphs (also-called Indus Script epigraphs). The rebus reading is that of a person seated in a yogic posture on seals; kamad.ha 'penance'.

There are three streams of semantics cognate with the word, 'khambat': 1. name of a people, Munda; 2. reference to a mint, smithy; 3. trembling (as in earthquake) since the Gulf of Khambat is a region prone to plate-tectonics.

Munda: kompat., kompa_t, kumpa-t. adj. with **mund.a,** a genuine munda,one of those generally called mundas simply, in contrast to **mahali mund.a, ho-mund.a, birur.u mund.a** etc. (Mu.lex.) kammat.i 'coiner' (Ka.); ka - ma - t.t.i 'labourer, one who works with a hoe, digger of earth' (Ta.Ma.) **kampat.t.am** coinage, coin ((Ta.); **kammat.t.atn, kammit.t.am** coinage, mint (Ma.); **kammat.a** id. (Ka.); **kammat.i** coiner (Ka.)(DEDR 1236).

Mint, smithy : kampat.t.a-k-ku - Lam mint; kampat.t.a-k-ka-ran- coiner; kampat.t.a- mul.ai **die, coining stamp (Ta.lex.) [cf. the nasal in** kapr.aut. **jeweller's crucible made of rags and clay (Bi.)(CDIAL 2874)].** kapr.aut., kapr.aut. **jeweller's crucible made of rags and clay (Bi.);** kapr.aut.i **- wrapping in cloth with wet clay for firing chemicals or drugs, mud cement (H.) [cf. modern compounds:** kapar.mit.ti_ **wrapping in cloth and clay (H.);** kapad.lep **id. (H.)](CDIAL 2874).** kapar-mat.t.i **clay and cowdung smeared on a crucible (N.)(CDIAL 2871).**

Trembling, quake kampana **trembling (Sus'r.); tremor, earthquake (Pali);** kam.pan.a **trembling (Pkt.);** kambin.i (S.); kambr.i (L.);kamn.a (L.); kapani (A.); *ka_pan, ka_pani (B.); ka_pan (Mth.)(CDIAL2768).*

Kamboja-Dvaravati route ran from Kamboja mahajanapada in northeast Afghanistan and southern Tajikistan to Dvaraka in Anarta (Gujarat). Kautilya's Arthas'astra -4th century BCE -- notes Kamboja and Saurashtra as composed of vartta-s'astra-upa ~ jivin (People living by agriculture, trade and weapons). [Kamboja. Sauraastra. ksatriya. shreny.adayo varttas has trapajivinahu 11.1.04]

(Ankuravathu section of Petavathu Jataka, verses *257*-258) attests the Kamboja-Dvaravati marga, the caravan route between Pamir, Badakshan of Afghanistan and Dvaravati of Saurashtra, Gujarat. Saurashtra was recognized as the region where merchants from various regions gather. *[Life as depicted in Jain canons, p 273,* Celje, 1947, J. C. Jain; Geographical Data in Early Purana, 1972, p 32 1, Dr M. R. Singh)

Kautiliya also notes that the trade route across Dakshinapatha, the south, is the superior route for it is rich in mines and abounds in diamonds, rubies, pearls, and gold.

During the period of Maitraka rulers, the seaport of Vallabhi (Khambat also known as Gajni) in Saurashtra had trade by sea with southern Bharatam, Sri Lanka, eastern Bharatam, Burma, Svarnabhurmi (Indo-China). This is consistent with the mention in the Periplus *of the Erythraean Sea* of western seaports. Kamboja sangha is attested in Anuradhapura. Sinhalese inscriptions of 3rd cent. BCE: (no. 553 + 990) : Pali text *Sihalavatthu* of about the fourth century CE, attests that a group of people called the Kambojas (p 109) were in the Province of Rohana on the island of Tambapanni i.e *Sri Lanka.* [David Parkin and Ruth Barnes, 2002, Ships and the Development of Maritime Technology on the Indian Ocean, 108-109) In a China-Bauddha record, Guna Varman, grandson of the king of Kabol is said to have arrived in the capital of Sung Dynasty of China after passing through Sri Lanka and Java in 424CE. [M. Anesaki, 1903, *Journal of Royal Asiatic Society,* April 1903, p 369.] This is remarkable evidence of Kabol as the land of Kamboja with links to Java, Indo-China and of the presence of Hindu king in Kabul two centuries earlier than Hiuen Tsang **(631** CE) who also found a kshatriya king in Kabol.

Even the name of the Kambujas, the heirs of Funan, may be related to the Iranian Kambojas. [The Indianized States of South-east Asia, 1964, p 46-47 by George Coedes]

Some scholars also opine that Pallava of Kanchi were a section of Iranian Pahlava closely allied to Kamboja.

These dramatic attestations of a maritime tradition linking Kamboja of north-western Bharat along the coastline of Gujarat, Sind and SriLanka are evidenced by the presence of pearls and gems brought by trade. There is a possibility that there was also trade in metals and sharing of traditions of the writing system.

If the movement of the people (yadava, a'yarkulam) from Dwaraka mentioned in Mausala parva of Mahabharata, the early presence of ve - lir trace to circa 3000 BCE, dating the ve-lir of sangam in southern Bharatam to 1775 BCE (that is 3000 BCE minus 1225 years).

The significance of this sangam text is related to the continuity of copper work by Ve-lir chiefs, linked to Dwaraka (Sarasvati or Indus Valley civilization).

Cempiyan is a Tamil vel., a chief-, cempiyan is a Ca - lukya king; petty ruler; chief-, title given by ancient Tamil kings to Ve - lallas.

The tradition holds that the daughter of Kavera of Brahmagiri (near Coorg, Sahyadri mountain ranges) was Lopamudra (also called Vishnumaya, daughter of Brahma or also called Kaveri) who married sage Agastya (who stemmed the ego of Vindhya mountains). With the intervention of Vinayaka, Kaveri turns into a river to become the Ganga of southern Bharatam. In order for Kaveri-muni to attain nihs'reyas , she resolved to become a river.

Sarasvati-Kaveri link in Indian Civilizational continuum

There are clear indications of link between Sarasvati River Basin and Kaveri River Basin consistent with the tradition of Mother worship and S'iva worship during the entire length and breadth of the nation, from Rameshwaram to Badrinath, from Hinglaj of Baluchistan, Dwaraka in Gujarath to Kamakshya in Assam.

There are many places named Kandiyur. One Kandiyur is near Kuttalam where the stone celt was found. Another is near Thanjavur on the road to Thiruvaiyaru. A third is in Thirunelveli.

King S'ibi was called Sembiyan. Sembiyan is a popular title assumed by a number of Chola kings. Some claim that Sembiyan denotes a descendant of Shibi.

This is an exemplification of a maritime tradition of working with s'ankha from 6500 BCE (that is, 8,500 years Before Present). This dated evidence for the early s'ankha industry is attested in the burial of a woman at Mehergar, 500 ms. north of Makran Coast not far from Karachi. The *turbinellapyrum zoological* species is provenanced only this part of the sea-coast - Makran coast, Gulf of Kutch, Gulf

of Khambat and Gulf of Mannar - (near Tiruchendur, Ki-lakkarai) and nowhere else in the world.

The cire perdue (lost-wax) technique used to make bronze statues in Mohenjodaro continues even today in Swamimalai on the banks of River Kaveri to make bronze *utsavamurti (utsava bera).*

Tiruverakam is the ancient name of swamimalai. Eraka means 'copper'. At Swamimalai, the tradition of making bronze statues continues even to the present day, a cultural continuum dated to Sarasvati civilization (circa 2500 BCE).

Why was Swamimalai chosen as a site for setting up workshops for making bronzemurti? What were the sources for minerals/metals needed for casting using cire perdue technique (lost-wax method)? copper was available northwest of Karur (an ancient site where punch-marked copper coins were found, located on the banks of River Kaveri, west of Tiruchirapalli).

Solid casting is in vogue in Swamimalai, Tiruchy, Madurai, Chengelpat and Salem in Tamil nadu, in Bangalore, Mysore in Karnataka, Mannar, Irinjalakuda in Kerala and in Tirupati in Andhra. The sus'ira method is prevalent in Central and Eastern Bharatam. The art flourished under Satavahana and Ikshvaku.

Not only are the Khetri mines of Rajasthan on the Sarasvati Basin and some regions of Afghanistan are rich in copper, but Southeast Asia (Indo-China, Cambodia, Malaysia and Thailand, in particular) are rich in both copper and tin. Pre-Harappan (circa 3500-2300 B.C.) sites of Nal, Kulli, Mehi in Baluchistan yielded copper and bronze objects. At Mehi was found a copper mirror 12.7 cms in diameter, having a copper handle representing a female figure with breasts and arms akimbo. Four bronzes obtained from Daimabad (Ahmednagar district, Maharashtra) of circa late Harappan Chalcolithic times (2000-1800 B.C.), they consist of a chariot yoked to a pair of bullocks driven by a naked man, an elephant, a rhinoceros and a buffalo. They stand nearly 28 cms high and all together weigh about 65 kg, Out of 200 Harappan artifacts 23% were alloyed with tin, 12% with arsenic and 8% with lead. It is possible that the creators of the Sarasvati Civilization and the Neolithic civilization on the banks of River Kaveri used these mineral/metal resources through coastal trade.

Smelting and casting in Central Thailand at Non Pa Wai, Nil Kham Haeng, and Non Mak La. Ban Chang, near Udon Thani of northeastern region of Thailand, is perhaps the world's oldest bronze age culture.

The first dates of the artefacts using the thermolummescence technique resulted in 4420 BC-3400 BC dates, which would have made the site the earliest

ever bronze age culture of the world. (Courtesy : Phasook Indrawooth http ://www.earthportals.com/Portal Messenger/indothailinkages2.html) The Bronze age community, 3600 BC, of Ban Chang covered a hill and was continuously occupied for more than 3000 years. Graves dated to 3600 B.C. have produced bronze bracelets, bells and spearheads.

Thai bronze was made with tin and was distinct from Mesopotamian bronze that required the use of toxic arsenic. (http://www.csmngt.com/thailand historv.htm)

A remarkable evidence of Munda presence from ancient times in the shape called apsidal used for temple roofs. Apsidal Temples, also called *Gajaprishtakriti* in Sanskrit means an elephant's rump. The first sight of the Chalukyan Apsidal temple of Durgi Gudi at Aihole, fills one with awe and wonder at its perfect apsidal shape. Here Durgi probably refers to a fortified masonry defence structure and Gudi means a temple, probably or Durga in ancient times. Punch-marked coins found in Karur of the Sangam Age contain symbols taken from Sarasvati hieroglyphs. The Western Chalukya built the Durga temple at Aihole in apsidal shape (ca. 7" century CE).

Where does the shape come from?

The roof of a Toda house in Nilagiri hills of Bharatam, a building in the marshes of Iraq (called mudhif reed-house) or on entrances of Bhaja (Pune, Maharashtra) Caitya Manmade cave (ca. 150 BCE) in Bharatam are comparable to the arched root shown in the impression of a ceylinder seal from Sivalinga found at Harappa and at Kalibangan indicate the continuing tradition of Siva worship; the wearing of sindhur at the parting of the hair by married woman is a tradition which was found on two terracotta toys of Nausharo (circa 2400 Before Common Era); similarly the tradition of yoga is depicted on terracotta toys of Harappa, Kalibangan and Mohenjodaro.

A ploughed field was also discovered in Kalibangan pointing to the domestication of rice cultivation over 4000 years ago. A river named Kaveri joins the River Narmada at Onkares'war a jyotirlinga tirthasthanam.

GIS based integrated studies between such lineaments and the resources and hazards have indicated that the intersections of dextral and sinistral faults are better loci for mineral search, NE-SW faults are better groundwater conduits and the NE-SW group are scismically active too.

GRAMMATICAL STRUCTURE OF THE INDUS VALLEY LANGUAGE

(With Special Reference to the South Indian Indus Script and Thamizh Grammar Tholkappiam)

Dr. R. Madhivanan

Introduction

Indus script continues to be a challenge to the research scholars all over the world. The first criteria which is internal is the grammatical structure. The grammatical structure of a language never changes in spite of borrowings of words almost entirely nouns from other languages. Hence grammatical structure refers by and large to verbs, prepositions, negative suffixes and similar basic elements. Analysing the grammatical structure is a vital parameter in identifying the language of all unknown script. The syllabic pattern in the writing system needs minute observation.

2. The second requirement in identifying an unknown language is the external criterion of archaeological finds which reveals the culture of the people who spoke that language. According to Taswin Husain, a Pakistan scholar, in his paper read at International Symposium on Mohenjodaro in 1973, 'the symbols impressed on the punch - marked coins of Indian kings upto 8th century A.D. are exact copies of the symbols engraved on the Indus tablets, pottery, stamps and graffiti, A close study suggests that all the Damuli (Tamil Brahmi) script is most likely the byproduct of the Indus Valley writing system.'

Prof. Asko Parpola's Remarks

3. As regards internal criterion Asko Parpola (1986) has pointed out that an impressionistic analysis of the Indus inscriptions suggested that structurally, the Harappan language was of **"a fairly pure left branching and agglutinative type" Dravidian is the only match"** in the recorded linguistic history of the Indian sub-continent.

4. As regards external criterion the major factors are the archaeological cultural and historical contexts, besides the findings of historical linguistics, especially with regard to the Indian sub-continent and the typological structure of the Indus script language, established by the application of linguistic and statistical method.

Computer Programme of the Russian Team

5. After twenty years of research by the Russian team of scholars headed by Prof. Y. Knorazov, state University, Leningrad, has ruled that all the available data proves that the Indus language could be classified only as a Dravidian language. According to a special computer Programme the integrated texts of the seals was divided into short units corresponding to a word or word - group. The scholars then analysed the positional statistical distribution of the signs in the texts.

6. The Russian team found out that the seal texts followed Thamizh grammatical rules including the Tholkappiam classification of six varieties of compound words which correlated with some phrases on the Indus seals.

Grammatical Features

7. It is noteworthy that striking similarities exist between the proper names of Indus inscriptions and the proper names still prevalent among (i) the Sindhi people living around the Mohanjodaro area and (2) Dravidians of South India. The Dravidian masculine gender marker "an" is suffixed invariably to most proper names of the Sindhi people. Even in Indus inscriptions we have instances of proper names used with as well as without this suffix.

Proper Names with Masc. Suffix appan, accan, attan

Proper Names, without Masc. Suffix appu, accu, attu

8. Many grammatical features peculiar to the Dravidian are invariably followed in Indus language. Some instances in point are :

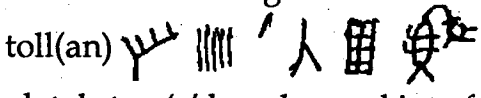
(i) Euphonic combination of vowels and consonants in compound words categorized under *sandhi* rules or *Punarchi Ilakkanam.*

(ii) Augmentative identical consonant occurs in between two components of a compound word
(evvi + caman - evviccaman)

(iii) Adjectival phrase added to the proper names such as prefixing, of ol, nal, 'ma', and a peculiar adjective 'el' as found in a Lothal Seal.

(iv) While pronouncing a vowel-consonant the consonant sound will form the first component and the vowel sound will follow according to Tholkappiyam. This rule is followed in the Indus inscriptions by writing the consonant and vowel signs side by side while writing such vowelconsonants. This is unlike the system of adding vowel markers to the consonant as in modern Dravidian languages.

In a Lothal inscription the vowel consonant *'to'* (ரொ) is represented with the sign for 't' first and the sign for 'o' following it.

L. 88. Naya(n) - toll(an) 

(v) Voiceless palatal stop 'c' has changed into fricative 's' in modern Dravidian owing to the influence of Aryan languages. But, Indus language maintains the voiceless palatal stop 'c' as it had

Aracan (king) or Araccan (Indus seal) It is pronounced as Arasan in modern Tamil.

9. Generally the term grammar connotes phonological, morphological, semantic, syntactic structures depicted in a language. My two decades of work on the decipherment of the Indus script has shown that the language of the Indus people about 3000 B.C. is clearly proto Dravidian.

10. As per my decipherment the phonemes of Indus language are 30 in number. (twelve vowels and eighteen consonants.) The *kurriyalugaram* i.e.. shortened 'u'vowel in ending is also present in the Indus language. But traces of shortened 'i' known as *kurriyaligaram* and *-aydam,* the shortened Velar plosive are not easily discernible for want of long sentences and literatures in the Indus language.

11. The word Initials, finals and medials are quite similar in the Dravidian and the proto Dravidian words found in the Indus valley seals and inscriptions. Non Dravidian consonant clusters like tra, kra, ska are not at all seen in any of the 5000 seals and inscriptions. The phonetic value of hard consonants *k.c.t.p.r* are in tact. The non-initials as mentioned in the traditional Thamizh grammar such as *la-ra.la.na,* never occur in the initial position in the words in the Indus inscriptions. The semi-vowels-Y and V are absent between - the vowel ending of the initial word and initial vowel of the final word both occurring in case of

compound word. Addition of semi vowel of Y or V is a must in the modern Dravidian grammar. But it was not so in the ancient days.

12. Even today the Gujarati, Marati, Oriya languages still avoid the use of semi -vowels in compound words. The grammatical structure of the proto Dravidian is still retained in the above languages to a great extent. But in later stage of the proto Dravidian language of the Indus Valley has accepted the Interpolation of semi-vowels in the compound words thereby accepting, both the usages. The velar nasal 'n', platal nasal 'n', retroflex nasal and labial nasal 'm' all the four are clearly distinguished. But it seems the Indus valley people had not differenciated the minute articulation of the nasal sounds namely the dental nasal and alveolar nasal. Some times intermigling the nasal signs. Geminations of nasal is also found in the early inscriptions and seals. But the later seals and inscriptions clearly differentiate the dental nasal and alveolar nasal. From this we understand that the grammatical knowledge of the people developed slowly paving way for better usage of the language.

Gramatical Structure never Changes never Varies

13. This is a well established fact that the basic grammatical structure of a language family never varies even through millennia though there are outward phonological and morphological changes. There seem to have been seven stages in the continued evolution of the Indus script.

1. Pictographic stage
2. Double line sketch stage
3. Single line sketch stage
4. Combined syllabic stage

   (Pictograph and syllable)

5. Post Harappan graffiti and Punch - mark stage
6. Combined alphabetic stage (Indus script and Brahmi script combined eg. Indrapala's metal seal of Jaffna)
7. Indus numeral mixed Brahmi script stage (Indus number signs are used in Thamizh Brahmi Inscriptions)

In all the above seven stages, the grammatical structure of the Indus valley was however well maintained.

A comparative study of Indus Script and south indian indus script

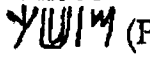
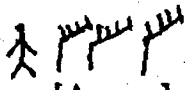
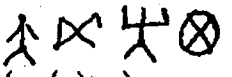
14. It is said that there are 417 signs in the Indus Valley writing system in which 112 signs occur.only once because of regional variations.. 200 signs of closed and combined syllablic nature occur less than 10 times. According to my analysis 75 signs happen to be allographs including pictographs. These 387 (112+200+75 = 387) signs are not basic signs but simply combinations and regional variations. The rest (417-387 = 30) 30 signs are the basic signs of closed syllabic - alphabetic nature which totally agree with the basic Thamizh alphabets mentioned as *"Mutal Ezhuthu"* comprising 12 vowels and 18 consonants.

Word initials, medials and finals as found in Tholkappiam agree with Indus language inscriptions as well as in South Indian Indus scripts found among Rock Art paintings.

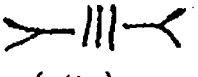
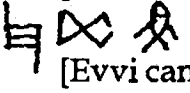
15. Finnish and Russian scholars have established after computer analysis that the writing system is syllabic. The attempts to read it either as pictographic or as alphabetic have not been successful. Tamil is a language whose script, and grammar were standardized millennia ago. My mentor the eminent etymologist G.Devaneya pavanar advised me to attempt the decipherement of the Indus script, applying the rules of the ancient Tamil grammar, Tholkappiam. That grammar clearly spells out which letters can occur as word initials, and which as word finals. Permissible consonant clusters, which can occur medially in words, are also laid down. The readings thus worked out fitted also with the knowledge of the practice of ancient Tamil merchants (attested in Tamil classical works) of affixing seals on their merchandise. A comparative study is attempted here of North and South Indus signs (South Indian) on the following topics are given in the Annexure

SIMILARITIES BETWEEN INDUS SCRIPT AND SOUTH INDIAN INDUSCRIPT

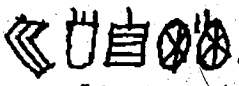
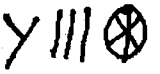
I. Initial Signs

INDUS SCRIPT		SOUTH INDIAN SCRIPT	
a)	M 1007  - (Uttan)	a)	ISADS Page 83 kdm 60 [Uganan]  (Potsherd)
b)	L 6001A  [Annan]	b)	ISADS Page 98 95 snp (Rockart)  (av(v)an)

2. Meidal Signs

a)	H 3585  [Kadha...i]	a)	DPOSE Page 121  (uttu) (Rockart)
b)	H 4386  [Evvi caman]	b)	DPOSE Page 122 (nav(v)an)  (Rockart)

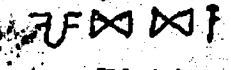
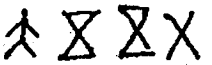
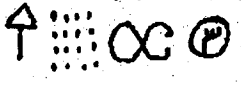
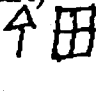
Final Signs

a)	H 3097  [Arangu Andannan]	a)	DPOSE Page 99 (uttan)  (Rockart)

4. Individual Signs

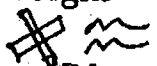
a)	H 4437  - (Rockart)	a)	DPOSE Page121  [Ka] (Ka)
b)	H 4564  [na]	b)	DPOSE Page 122 (na)  (Rockart)

5. Combined signs

a)	M 2362  [Ka(n)avvan]	a)	DPOSE Page 124  (Avvan) (Rockart)
b)	M 7018 	b)	ISADS Page 82 

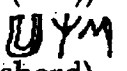
(Na(n)madan) [Ma... van] (Potsherd)

6. Double lined Signs

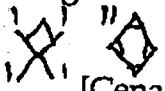
a) M 1102  [Nanna(n)]

a) ISADS Page 81 kdm 31  (Potsherd) (Vak(kan))

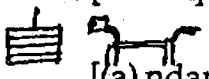
b) C 5069  [Kancaman]

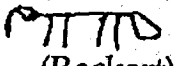
b) ISADS Page 83 kdm 60  (Kunna (n)) (Potsherd)

7. Pictographic signs

a) H 4109  [Cenan]

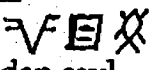
a) DPOSE Page 119  (Ce(y)) (Rockart)

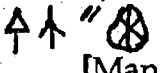
b) M 146  [(a) ndan]

b) DPOSE Page 123  (na) (Rockart)

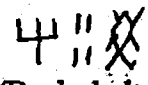
8. Word Forms

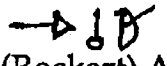
INDUS SCRIPT

a) M 2502  [Kadan cey]

b) 6012  [Manan]

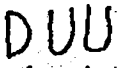
SOUTH INDIAN SCRIPT

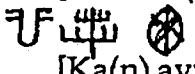
a) ISADS Page 76b  (Unna(n)Cey) (Rock shelter - Petroglyph)

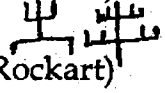
b) ISADS Page 76c  (Manatti) (Rockart) Alampadi

9. Identical consonant Cluster

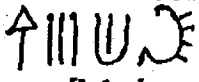
a) M 1471  [Anakka(n)]

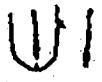
a) DPOSE Page 121  (Takka(n)) (Rockart)

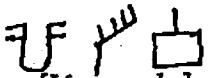
b) M 1341  [Ka(n) ayyan]

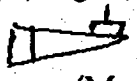
b) ISADS Page 76c  [Ayyatta(n)] (Rockart)

10. Non Identical Consonant Cluster

a) M 160  [Mathangan]

a) DPOSE Page 121  (Rockart) ((A)nagan)

b) H 3170  [Kananda]

b) DPOSE Page 119  (Rockart) (Manda(n))

Note : Concordance of Iravadham Mahadevan and the corpus of Indus seals and inscriptions of Prof. Asko Parpola, sorted from the end signs have been followed here. For the South Indian Indus signs, my field work research books - Indus script among Dravidian Speakers and *Dharumapuri paarai oviyangalil sindhuveli Eluthugal* have been followed

ISADS - Indus Script Among Dravidian Speaker.

DPOSE - Dharmapuri Parai Oviyangalil Sindhuveli Eluthukal.

M - Mohenjodharo

H - Harappa

L - Lothal

C - Chanhudaro.

Kdm - Kodumanam, Erode Dist,, Tamil Nadu

Snp - Sivanathapuram, Vellore Dist, Tamil Nadu

Indus Scriptology

16. About 200 Indus Inscriptions have been collected from 80 Rock Art shelters in South India. They are the earliest Thamizh epigraphs hitherto unnoticed by the International Scholars. There is another variety a combination of Indus script and Thamizh Brahmi Script which may be called as the earlier Thamizh epigraphy. "Early Thamizh epigraphy" of the renowned scholar I. Mahadevan deals solely with the Jain dialect epigraphs which were probably not representative of the language of the generality of the Thamizh population of the time. it can be taken only as descriptive of the Jain Tamil dialect epigraphy. The new finds of Indus script inscriptions in South India seem to require further refinement of the history of the Thamizh script by including two earlier stages (earliest than "early Thamizh Epigraphy") viz. Earlier Thamizh Epigraphy and the earliest Thamizh Epigraphy. The new finds of Indus Script Inscriptions in South India Epigraphy and Earliest Thamizh Epigraph of Indus Valley language grammatical structure continued to be maintained down the ages in Dravidian languages through post Harappan , South Indian Indus Script and Damily (Thamizh Brahmi) records.

17. Certain features were maintained in Pali and Prakrit languages too, since these languages were known as Vata Thamizh-Northern Thamizh dialects in those days. These grammatical features are noteworthy.

1. Pali and prakrit languages retained short 'e' and 'o' vowels which are simultaneously found in Thamizh and Indus Valley language.

2. Identical consonant clusters were written side by side and they had separate vowel and consonant classification.

3. Thamizh and Prakrit languages avoided phoneotic letters which are exclusively Sanskritic. They used native phonemes according to the Dravidian grammatical rules. Not even a single Non-Thamizh phoneme is seen in the Indus Valley inscriptions.

4. Thamizh and Prakrit languages followed singular plural system and avoided dual number of the Sanskrit grammar.

5. Thamizh and Prakrit languages followed proto-Thamizh accent and Phonetic system which were neglected as Apabrahma by the Sanskrit grammarians.

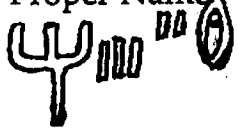
These observations among others establish the unbroken continuity of the grammatical structure of the Indus Valley language which enjoyed the supreme position as a Pan-Indian language (Proto Thamizh or Proto Dravidian.)

Methodology of Writing System Down the Ages

18. According to the material used for writing, the methodology of writing system also varied in ancient scriptology. For want of space while writing on metals, stones and hard surfaces one or two signs were left out for the inference of the reader. This applied to both Indus Valley seals and Brahmi inscriptions. I have given hereunder a list of such occurrences as a comparative study from inscriptions and, seals of Indus Valley and Thamizh Brahmi material.

Method of writing

1. Pronominal suffix denoting masculine gender is written as a separate unit at the end of the word. In certain cases the masculine gender suffix is omitted and has to be understood by guessing. Here is a very good example for the above.

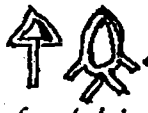
Seal No	Proper Name	Tamil translation
M. 177a		Udayan̲ (உதயன்)
M. 179		Uda(yan̲) உத(யன்)

In the second seal (179) the masculine / suffix (an) is omitted and has to be assumed. Indus seal scribes have observed both the practices.

2. In many cases they have used the shortest abbreviation in the form of the first sign or symbol for the full word which meant a proper name. Examples for this are many.

H-18a  ← cāṉaṉ (சானன்)

cā சா(சானன்) →

K-32a  ← mācā மாசா (சானன்)



3. In some seals the sign for 'a' is replaced by its alternative sign in the initial position. The masculine gender suffix is also deleted and understood.

M. 329a  aṉakk(an) அணக்க(அன்)

H. 161c  andan அந்தன்)

4. In some seals vowel sign for 'a' is added to the consonant sign to denote long vowel consonant. In other cases a straight line attached to the sign denoted long vowel consonant.

M. 361a →  māvaṉ மாவன்

H. 86a  māṉaṉ மாணன்

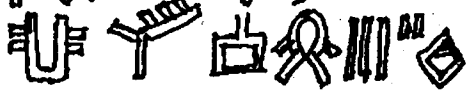
L.18  ← Yāṉaṉ யாணன்

5. Double short vowel signs denote the respective long vowel.

M.401  ōvatta(n) ஓவத்த(ன்)

6. Consonantal clusters are depicted as double consonant signs. In some cases single consonant sign stand for a consonantal cluster.

H. 98a  mācāttan மாசாத்தன்

H. 134a  kāṉāṉḍa cat(t)an

கானாண்ட சா(த்)தன்

7. In some cases, final sign (consonant) of masculine gender suffix is ornitted but the vowel marker being the first component of the suffix is retained.

B. 10a  atta(n) அத்த(ன்)

H. 65a kāṉatta(n) கானத்த(ன்)

9. In some abbreviations the middle consonant sign alone is represented t mean the full word.

M. 618  -va-(avvan) வ (அவ்வன்)

M. 615  -na-(nannan) ந (நன்னன்)

10. A single line is doubled in signs denoting the same pronounciation an meaning. They may be closed on four sides or left open above and bellow.

K.vm-1  nakk(n) நக்க(ன்)

L.118a  nambi நம்பி

Remnants of Indus writing system in the Tamil language

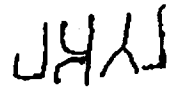
Some remnants of Indus writing system are fortunately seen in the 3rd Cer tury BC Tamil (or Tamil Brahmi) inscriptions found in Tamil Nadu.

1. Proper names

Some of the proper names deciphered from Indus seals are found in Tam cave inscriptions also.

It will be interesting to see certain syllabic structures of the Indus system c writing, continued as vestigial remains, in the Brahmi script of 300 B.C.

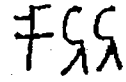
a. a single consonant sign standing for an identical consonantal cluster

Indus script  **Tamil Brahmi script** 

cātan cātan

(but actually pronouncced as cattan)

b. dropping of the final masculine gender suffix (-an)

Indus script **Tamil Brahmi script** 

cātta.  korra

 ← cāta

(final 'n' is dropped but actually pronounced as cattan)

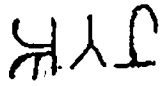
final(n) dropped, but actually pronounced as korran.

c. writing double alveolar nasal signs in the place where a single, nasal sign is enough (such nasal signs not being identical)

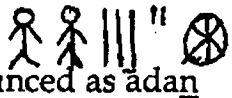
Indus script  **Tamil Brahmi Script** 
Cāttann ātann

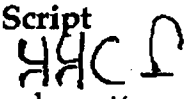
d. drawing single perpendicular line or stroke to denote long vowel

Indus script

Indus script  **Tamil Brahmi Script** 
nānan ātan

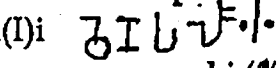
e. Writing two short vowel signs to denote a long vowel sound.

Indus script ..... aatan 
to be pronounced as ādan

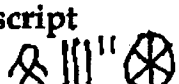
Tamil Brahmi Script ..... aaṭan 
to be pronounced as attan

f. adding vowel sign to the consonant sign to make a vowel consonat syllable.

Indus script  anni
(a proper name - vowel i() is added

Tamil Brahmi Script
Venpal(I)i 
(a place name - vowel i ( ) is added.

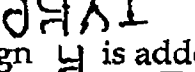
g. writing the masculine gender suffix (-an) in the proper name as a separate syllable.

Indus script
cātt-an 
(proper name)

Tamil Brahmi Script
kaḍal-an 
(proper name in Arittapati-insc).

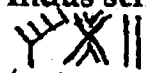
h. adding the short vowel sign to danote the elongation of vowel consonant sound.

Indus script
M361 māvan 
short vowel added to (m) to elongate it as 'mā', is an alternant to (u or v)

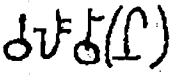
Tamil Brahmi Script
cāt(t)an 
short vowel sign is added to to (c) to elongate it as cā

i. **In a very few cases long vowel consonant sign is written in the place of short vowel consonant sign, probably due to the mistake of the scribe in some places.**

Indus script


nannan
(not naannan)

Tamil Brahmi Script

valavan (not valaavaan) 
from inscribed sherd excavated in Arikkamedu (90-91)

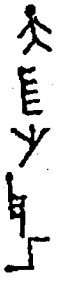
j. While indicating proper names of Indus inscriptions and Tamil Brahmi cave inscriptions a difference may be noticed that in the Indus inscriptions due to limitations of space the names are written in abbreviated terms whereas in the Brahmi cave inscriptions the proper names are fully written without any abbreviation because there is no limitation of space. Further in the latter the names of merchants are also clearly specified, and sometimes the goods they sold and their native town are also indicated.

k. Similarities between the signs of the Indus script and the signs of Tamil Brahmi scripts are also observable. The lines of the stage of development being clearly discernible even on the face of it.

Indus script

(Vowel)

a
i
u
e
o



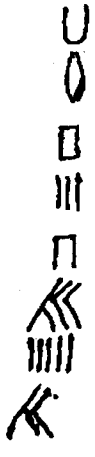
Tamil Brahmi script



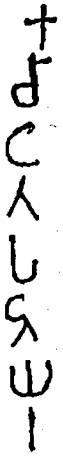
Indus script

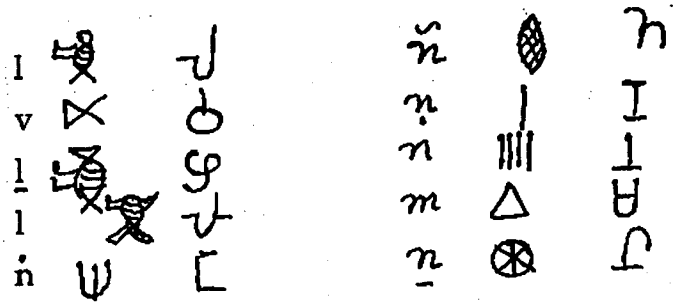
2. (Consonant)

K
c
ṭ
t
p
r
Y
r



Tamil Brahmi script





The provenance and direction of adding vowel markers to the consonant sound sign continued to be more or less the same from the time of the Indus script to that of the Tamil Brahmi script.

		Indus script	Tamil Brahmi script
a.	straight lines at the sides	U(ka) U(kā)	⊥(ka) ⊤(kā)
b.	markers at the top	U(kō)	⊤(kō)
c.	at the bottom or on the right side.	U(ku) U(ku)	⊤(kū)
d.	on the sides strokes upward.	U(cē)	⊤(kē)
e.	cross cutting line or upward stroke raising on the right and lowering on the left.	U(ti)	U(tī)

My observations

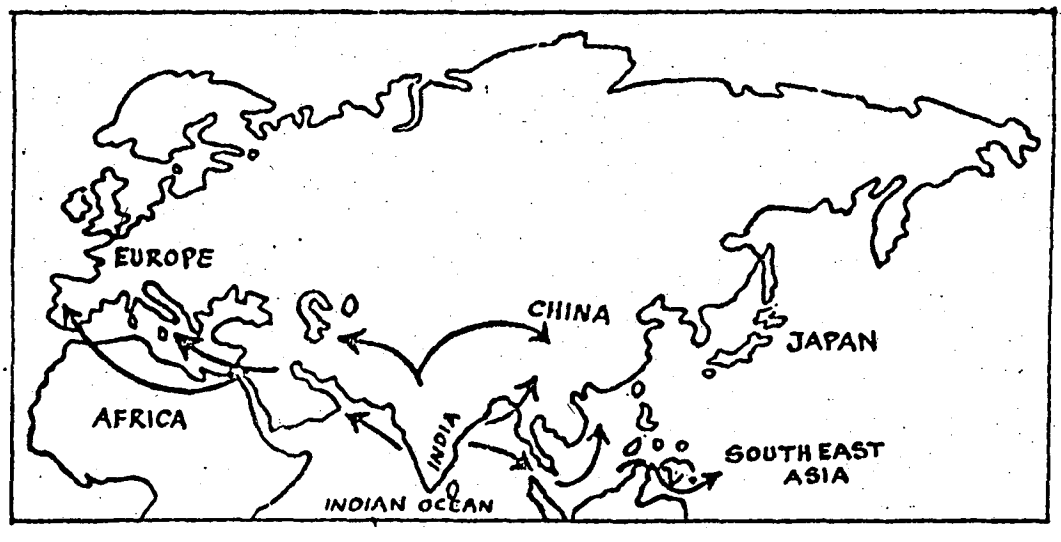
Indus script is an indigenous invention with a long period of gastation and growth. I. Mahadevan also supports this view. Abdul Huque makes an interesting comparison between the most frequent signs of the indus script and the most frequent sounds in Brahmi Script. He doubts whether similarity of form may mean similarity of sound. I have observed that similarity of form has meant similarity of sound too.

1. Universal featurs of writing are visible in the indus script since it has passed the stages of logograph, and ideograph and attained the stage of syllabic formation during the Indus civilization period.

2. There are no bilingual inscriptions. The monolingual inscriptions reveal the fact that a single language was in usage in Indus Valley for thousands of years from 8000 BC to 2000 BC. Proto-Dravidian (proto-Tamil) language is the only possibility to merit investigation. The proto-Tamils were the best navigators, flourishing merchants, city builders, and skilled in metallurgy.
3. The structural and analytical study of the script clearly indicates the sameness of Tamil and Indus language. For example, the numerous complementary suffixes (gender suffix in proper names) found in the Indus inscriptions are quite similar to the masculine gender suffix of the Tamil proper names. This is a significant finding and the most fundamental grammatical feature existing forever. Passage of time never engulfs the fundamental grammatical features of the languages though in other details there may be changes.
4. 1 tried to look beyond the structural studies with a view to acquiring a broad comprehension of the contents of the Indus inscriptions even before decipherment.
5. All the ancient oriental inscriptions contain proper names. Most of the Indus seals and inscriptions were used by the merchants.
6. The demand for fluency and speed in writing had necessitated the radical simplification of their shape.
7. Pictorially identifiable sign apparently has been used sometimes to mean a thing at variance with the primary pictorial meaning.
8. The fish figure with a roof-like mark over it has been read as a whole by me as the proper name 'chaman'. This proper noun is widely used now also not only among Dravidians but also among Sindhi people who still live in Pakistan and among the North Indian non-Brahmins as Chamanlal.
9. The Indus scribes have simplified the system of writing into a syllabic form by breaking the word into individual syllables and chose one sign for each syllable.
10. When the scribes, found it difficult to depict abstract concepts by drawing pictures, the meaning of the pictographs was extended from the name of object to all of its homonyms, that is, words with a similar phonetic shape but a different meaning.
11. Identical and non-identical consonantal clusters occur medially in the words. Such clusters in certain cases, are written from top to bottom and in some cases from bottom to top.
12. There are alternative signs for some of the syllables or alphabetic sounds generally found as in Egyptian, Hieroglyphic and other pictographic writings.

13. The legend on the seals and inscriptions are all proper names of Tamil origin. In most of the cases, it reads "son of 'x'. Place names are very few.
14. Grammatical structure of the Tamil language and etymological rules governing the Dravidian proper names have been taken as the measuring rod to verify and to prove the correctness of the decipherment.
15. The seals and inscriptions are read from left to right.
16. The inhabitants of the Indus Valley were undoubtedly Dravidians as held already by Sir John Marshall, Wheeler, Heras,Basham and others. This is also reinforced by the fact that the Greeks and Romans used the word "Indus" to denote the dark-skinned people. The term "Indi" also meant black men.
17. In a learned article in "Senthamil Chelvi" (November 1994) P.L. Samy IAS has established that the word "sira" occurring in Rg Veda to denote the dams destroyed by Indra is the pure Tamil word "Chirai" used in Tamil Sangam literature.
18. Knowledge of grammar had its origin only among the Tamils and it spread all over the world later. This is admitted by the eminent Sanskrit Professor and Rig Vedic scholar Wakankar (Cf: chart, in his book Ganesha Vidya, 1967).

KNOWLEDGE OF GRAMMAR WENT FROM INDIA TO ALL ANCIENT COUNTRIES



சிந்து எழுத்து அடிப்படை வடிவங்கள் - தமிழி எழுத்து ஒப்பாய்வு

பூரண சந்திர ஜீவா

1:0: சிந்து எழுத்தாய்வு (Indus Script) என்பது தமிழின் தொன்மையை உணர்த்தும் ஓர் ஒப்பற்ற ஆய்வாகும். சிந்து எழுத்தாய்வு இன்று ஓர் உச்சநிலையை எட்டி, அது எம்மொழிக் குடும்பத்திற்குரியது என்பது ஐயமின்றி விளக்கமடைந் துள்ளது. இடையில் வெவ்வேறு மொழிக் குடும்பங்களுக்குரியதாகக் கூறப்பெற்ற கருத்துகள் புறந்தள்ளப்பட்டு, சிந்து எழுத்து திராவிட மொழிக்குரியதாக உலக ஆய்வாளர்களால் கருத்துரைக்கப்பட்டுள்ளது.

1:1: இங்கு நாம் எடுத்துக் கொண்டிருக்கும் சிந்து எழுத்து என்பது இவ்வகை எழுத்துமுறைதான் என்று உறுதிபட உரைக்க முடியாதவாறு படவுருவன் (Pictograph), சொல்லுருவன் (Logograph), சொல்லசையன் (Logo Syllables), மற்றும் உயிர்மெய்யன் (Syllabary) ஆகிய எழுத்துமுறைகளுக்குரிய வடிவங்களுடன், ஒலிநிலையான எழுத்து வடிவங்களும் (Phonetic Signs) இணைந்து, ஒரு ஒருங்கிணைந்த எழுத்து முறையாக உள்ளது. எகிப்திய புனிதப்பொறிப்பான (Hieroglyphic) இயரோகிளைபிக் என்பது இத்தகையதொரு ஒருங்கிணைந்த எழுத்து முறையென்று ஜோசப் நாவே, T.W. ஸ்வய்ன்[1] போன்ற தொல்லெழுத்தாய்வாளர்கள் கூறியுள்ளனர். சிந்து எழுத்து முறையும் அத்தகையதொரு எழுத்துமுறையே! காண்க.

1. படவுருவன் : (Pictographs)

2. சொல்லுருவன் : (logographs)

3. சொல்லசையன் : (logosyllables)

4. உயிர்மெய்யன் : (Syllabary)

5. ஒலிநிலை : (phonetic)

இவ்வடிவங்களிடையே காணப்படும் வேற்றுமைப்பண்புகள் இவற்றின் மாறுபட்ட எழுத்து முறையின் தன்மையை உணர்த்துகின்றன. முதல் வகை வடிவங்கள் படநிலையாகத் தன்பெயரே சொல்லாக உள்ளன. இரண்டாம் நிலையில் வடிவங்களின் பெயர்கள் அவற்றோடு தொடர்புடைய வேறு பொருளை உணர்த்துவது இயல்பாகத் தெரிகிறது. எடுத்துக்காட்டாக மலையும் அரசிலையும் இணைந்திருப்பதால் மலையரசு என்பதையும், மலை வடிவம் மலைதல், போரிடுதல், சூடுதல் என்பன போன்ற கருத்துகளையும், கால் வடிவம் இயமன், காற்று எதையும் உணர்த்த வாய்ப்புள்ளது. மூன்றாவது வகையில் படவுருக்களுடன் சில அசைவடிவங்கள் இணைந்துள்ளன. படவுருக்கள் வடிவங்களுடன் இணைந்து வருகின்றன. இவை, செயற்கையாக மனிதன் உருவாக்கிய வடிவங்கள் என்பதை மனதிற் கொள்ள வேண்டும். நான்காவது வகை, செயற்கையாகவும், வேறு துணைக் குறியீடுகள் இடுவதற்கு வசதியற்ற தனித்தனி வடிவங்களாகவும் உள்ளன. இவை ஒவ்வொன்றும் ஏதோ ஒரு ஒலியை அல்லது கருத்தை உணர்த்தக்கூடும். இவை மனிதனால் நியமிக்கப்பட்டவையாகவே இருக்க முடியும். எனவே இவற்றை மினாவோன் கிரீட் நாகரிக எழுத்துமுறையான இலீனியர் - B, சைப்ரஸ் எழுத்து முறைகளுக்கு ஒப்புடையதாகக் கொள்ளலாம். கடைசியாக 5ஆவது வகை வடிவங்கள் யாவும் செயற்கையாக மனிதனால் தன்னிச்சையாக உருவாக்கப் பட்டனவாக உள்ளன. இவை, ஒரு குறிப்பிட்ட பொருளை அல்லது கருத்துருவைத் தாமாக வெளியிட இயலாதன. ஏனெனில் படவுருக்கள் அல்ல. எனவே இவை மாறுபட்ட வகையின என்றும் இவ்வகைகள் ஒவ்வொன்றும் வெவ்வேறு எழுத்துமுறைகளின் எச்சங்கள் என்றும் கொள்ளலாம். இவற்றுடன் சிறு கீற்றுக் கோடுகளாலான எண்கள், மற்றும் சில குறியீடுகளும் இச்சிந்து எழுத்து முறையில் உண்டு.

1:2: தமிழில் இத்தகைய எழுத்துமுறைகள் முன்பு இருந்து, அவை படிப்படியாக வளர்ச்சியுற்று நாம் இன்று காணும் தமிழ் எழுத்துவடிவங்களாக மலர்ந்திருக்க வேண்டும். இது குறித்து தமிழ் நூல்களில் விளக்கக் குறிப்புகள் உள்ளன. நிகண்டுகள் இன்று அறிவியல் வயமான எழுத்து முறைகளின் பரிணாம வளர்ச்சி நிலைகளாகத் (Evolutional Stages) தொல்லெழுத்தாய்வாளர்கள் குறிப்பிடும் படவுருவன் (Pictographs), சொல்லுருவன் (logographs), உயிர்மெய்யன் (Syllabary), மற்றும் ஒலியெழுத்து (Phonetic) முறைகளைத் தெளிவுபட எடுத்துரைக்கின்றன. திவாகர நிகண்டு.[2]

"வடிவெழுத்து பெயரெழுத்து, முடிவெழுத்து தன்மை
யெழுத்தென எழுத்தின் பெயர்இயம் பினரே"

என்கிறது. இவ்வகை எழுத்து முறைகள் உலகத் தொல்லெழுத்து வளர்ச்சியின்

தொன்மையான நான்கு நிலைகளாகும். (1) வடிவெழுத்து என்பது உருவெழுத்து உலகின் மிகப்பழைய எழுத்துமுறை. வடிவம் - எழுத்து, ஓவியத்தன்மை கொண்ட இந்த எழுத்துமுறையைப் படவெழுத்து (Pictograph) என்கிறோம். (2) பெயரெழுத்து : இதனைச் சொல்லுருவன் (Logograph) என்பர். ஒரு படவுருவின் பெயர் அதனுடன் தொடர்புடைய வேறொரு பொருளை - கருத்தை உணர்த்தும். பெயருடன் தொடர்புடைய எழுத்து. அப்பெயரை விளக்க அதனுடன் இலக்கணக் கூறுகளுக்கான அசைகளை இணைத்தால் அது சொல்லசையன் (Logosyllable) எனப்படும். சொல்லுருவனின் வளர்ச்சியுற்ற நிலையே சொல்லசையன் (3) முடிவெடுத்து : ஓர் அசைக்குரிய வடிவம், ஒலி ஆகியவற்றை முன்பே மனதில் முடிவுசெய்து ஆயத்த வடிவமாக அமைத்துகொள்ளும் இவ்வகை எழுத்து (Syllabary) உயிர்மெய்யன் எழுத்து எனப்படும் (4) தன்மையெழுத்து : ஒரு சொல்லின் தன்மைக்கேற்ப அமையும் ஒலிகளை அவற்றின் தன்மை விளங்க வடிவ-வரிவடிவமாக எழுதிக் காட்டுவது. செவிப்புலனாகும் ஒலித்தன்மையுடைய எழுத்து (Phonetic). தனித்தன்மையற்ற எழுத்து. இவற்றைப் பிங்கல நிகண்டின் அடிக்குறிப்பிற் கண்டவாறு விளக்குவதாயின் 'வடிவெழுத்து - செவிப்புல ஒலியைக் கண்ணுக்குப் புலப்பட எழுதுவது : பெயரெழுத்து : வடிவெழுத்து முதலாக வழங்கும் எழுத்து களுக்கு இடும் பெயரெழுத்து : தன்மையெழுத்து - செவிப்புலனாகிய ஒலியெழுத்து; முடிவெழுத்து - வடிவெழுத்து முதலாயுள்ள எழுத்தினை மனத்தாற்றுணிவது முடிவெழுத்து எனலாம்' என்று கூறுவர். நம் முன்னோர் எழுத்துமுறையின் பரிணாம வளர்ச்சியை எந்த அளவு ஆய்ந்தறிந்திருந்தனர் என்பதை இவை உணர்த்துகின்றன.

2:0: தமிழ் இவ்வாறு பல்வேறு வளர்ச்சி நிலைகளைத் தாண்டி வந்துள்ளமையைச் சிந்து எழுத்துப் பதிந்து வைத்திருப்பதையே அதன் எழுத்து முறைகளின் எச்சங்கள் காட்டுகின்றன. மேற்கூறிய வடிவங்களில் படவுருக்களையுடைய வடிவங்களை விலக்கிவிட்டால், அதன் பின்னரும் சில வடிவங்கள் காணப்படுகின்றன. இவற்றை எளிமையான அடிப்படை எழுத்துகள் என்றும், குறியீடுகள் ஏற்று வரும் எளிமையான அடிப்படை எழுத்துகள் என்றும், மற்றும் உயிர்மெய்யன் எழுத்துகள் என்றும் தொகுக்கலாம். அவற்றுள்ளும் ஒரு சில குறிப்பிட்ட எளிய வடிவங்களே தனித்தும், குறியீடு ஏற்றும், கூட்டுவடிவங்களாக இணைந்தும் வருவதையும் காணலாம். இந்த எளிய அடிப்படை எழுத்துகள் மேற்கூறிய 3 நிலைகளிலும் பங்கேற்று வருவதை ஆராய்ந்து உணரலாம்.

2:1: அடிப்படை எழுத்தென்பன எளிமையான எவ்விதமான குறியீடுகள், பிற வடிவங்கள் ஆகியனவற்றுடன் இணைந்திராமல் தனித்து வருவனவும் - தனித்து இயங்குவனவுமாகும். இவற்றைச் சிந்து முத்திரைப் பொறிப்புகளில் மிக எளிதாக இனங்காணலாம். இவை தமது எளிய வடிவங்களிலேயே, தத்தமது வடிவத்தோற்றங்

களுடன் பயின்று வருவனவாகும். இத்தகைய எளிய வடிவங்கள் சிந்துவெளி எழுத்து முறையை நாம் நன்கு உணர்ந்து கொள்ள உதவுவனவாகும். எனவே படவுருக்களை அடிப்படையாகக் கொண்ட எழுத்து வடிவங்களை நீக்கி மீதமுள்ள அனைத்து வடிவங்களும் சிந்து அடிப்படை எழுத்துகளை அடிப்படையாகக் கொண்டே அமைக்கப்பட்டனவாகும். இவ்வடிவங்களை மூன்று வித மூலங்களில் இருந்து திரட்டலாம். அவை (1) அடிப்படை எழுத்துகளாகப் பயில்வன (2) உயிர்க் குறியீடுபெற்ற வடிவங்களில் இருந்து பயில்வன. மற்றும் (3) கூட்டெழுத்து களில் இருந்து பயில்வன. இவை அடிப்படை வடிவங்கள் என்பதற்கான மற்றொரு காரணம் இவை அளவான எண்ணிக்கைக்குரிய சிறு கீற்றுக் கோடுகளை உயிர்க்குறியீடுகளாகப் பெற்று வருவதாகும் எ-டு:

(1) உயிர்க்குறியீடுபெற்ற வடிவங்கள் :

(2) அவற்றின் அடிப்படை வடிவங்கள் :

மேற்காணும் குறியீடேற்ற அடிப்படை வடிவங்கள் எளிய அடிப்படை வடிவங்களின் மீது அமைந்தவை என்று அறியலாம். எனவே மூவகை முறைகளில் இருந்து தொகுக்கப்பட்ட வடிவங்கள் வருமாறு:

(1) அடிப்படை வடிவங்களாகவே வழங்குபவை:

(2) உயிர்க்குறியீடேற்ற வடிவங்களில் இருந்து :

(3) கூட்டுவடிவங்களில் இருந்து திரட்டப்பட்டவை:

(4) சிந்து அடிப்படை வடிவங்களின் முழுத்தொகுதி:

இவ்வடிவங்களின்றி சிந்து எழுத்தின் 480 வடிவங்களும் இவ்வடிப்படை வடிவத் தொகுதிகளில் இருந்தே உருவாக்கம் பெறுகிறது என அறியலாம்.

2:2: சிந்து எழுத்தில் அடிப்படை வடிவங்கள் சிறு கீற்றுக் கோடுகளை ஏற்றுவருவதை அறிவோம். அவற்றின் தன்மையை உணரவேண்டும். சிந்து எழுத்தை

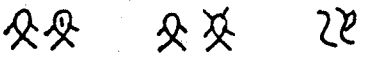
உருவாக்கியவர்கள் இதற்கு உயர்க்குறியீடுகள் இட வேண்டும் என்று விரும்பினார் களா என்று கேள்வி எழுகிறது. அக்குறியீடுகள் அடிப்படை வடிவங்களின் இடமதிப்பை - ஒலிநிலை மதிப்பை மாற்றுகின்றனவா என அறியவேண்டும்:

1. அடிப்படை வடிவம்	2. உயிர்மெய்யாக
1. 1103 : 	1. 2993 :
3074 : 	1400 :
2523 : 	4285 :
	1380 :
2. 4232 :	2. 2587 :

சிந்து எழுத்திலேயே எழுத்துச்சிக்கனம் கருதி உயிர்க்குறியீடு இடாமல் எழுதப்பட்ட வடிவங்களும், உயிர்க்குறியீடு இட்டு எழுதப்பட்ட வடிவங்களும் ஒருங்கே இடம்பெற்றுள்ள நிலையை நாம் மேற்காணும் எடுத்துக்காட்டுகளால் அறியலாம். எனவே, இவை அடிப்படை வடிவங்கள் என்றும், இவற்றில் இடப்பெறும் கீற்றுக்கோடுகள் உயிர்க்குறியீடுகள் என்றும் உணரலாம். இம்முத்திரைகளில் ஒற்று இரட்டித்தலுக்குத் தனியிடம் உண்டு. அவ்வாறு வருவன தெளிவான - வெளிப்படையான எழுத்து - ஒலிவடிவங்களாகக் காணப்பெறும் : (எ.டு)

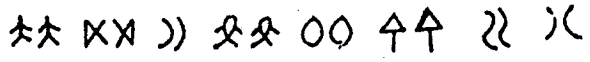
இல்லவன் வல்லான் பாட்டன் நாட்டான்
எத்தன் வள்ளல் அப்பன் அச்சன்

என்பனவற்றள் ல்ல, ல்லா, ட்ட, ட்டா, த்த, ள்ள, ப்ப, ச்ச என்று வருவன ஈரொற்று உடனிலை மெய்ம்மயக்கம் எனப்படும். மேற்காணும் சிந்து எழுத்து முத்திரைகளில் இத்தகைய வடிவங்கள் உள்ளன. இவற்றை அடிப்படை வடிவங்கள் - உயிர்குறியீடு ஏற்ற அடிப்படை வடிவங்கள் என்ற அசையமைப்பில் கொள்ளலாம். எ-டு.



இத்தகைய வடிவங்களை ல்ல, ல்லா, (ல்ல்) என்பன போன்ற தமிழ் வடிவங்களுக்கு ஒப்பாகக் கருதலாம். சிந்து எழுத்தில் இவ்வாறு ஈரொற்றுகள் இரு அடிப்படை எழுத்துகளாகவும், அடிப்படை எழுத்து மற்றும் உயிர் குறியீடேற்ற அடிப்படை எழுத்து என இருமுறைகளிலும் எழுதப்படும்: இவற்றை மூன்று வகையாகச் சிந்து எழுத்தில் காண்கிறோம்.

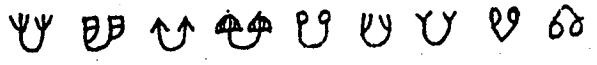
1. ஈரொற்று தனித்தனிவடிவமாக:



2. ஈரொற்று இணைந்த வடிவங்களில்:



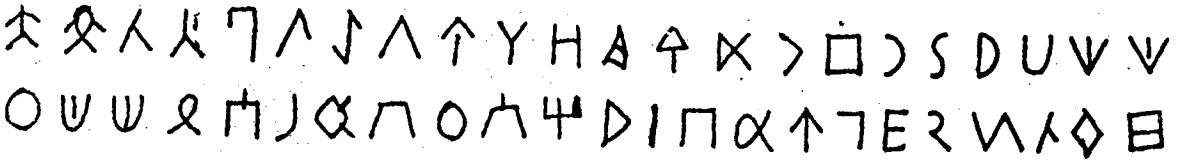
3. ஈரொற்று வடிவ அகர அச்சில் :



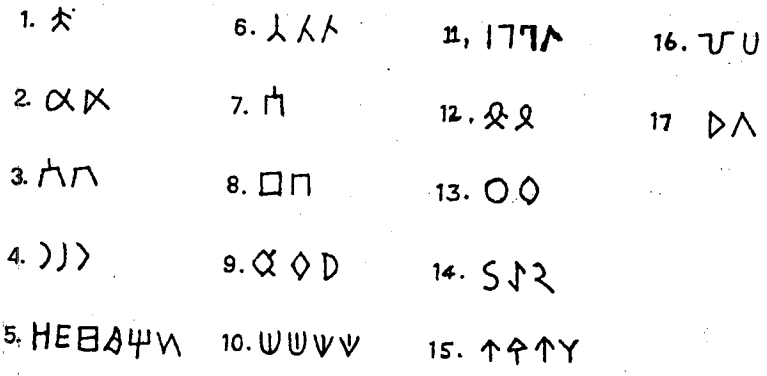
இவ்வடிவங்கள் இரு அடிப்படை வடிவங்களின் இணைகளாதலால் இவற்றை ஒற்று இரட்டித்த உடம்படுமெய்களாகவே கருதலாம். இது தமிழ் மொழியின் அடிப்படை எழுத்தின் ஒரு செயல்பாட்டைக் காட்டுகிறது. சிந்து எழுத்தின் தமிழ்மொழி இயல்பைக்காட்டுகிறது. ஒற்று இரட்டித்தல் வேறு சில மொழிகளில் இருப்பினும் தமிழின் மிகச்சிறப்பான ஒரியல்பு எனலாம்.

3:0: மேற்காணும் மூன்று நிலைகளில் இருந்து திரட்டப்பட்ட அடிப்படை வடிவங்களை ஒப்புநோக்கி, அவற்றின் ஒப்பான வடிவங்களை நீக்கியும், மாற்று வடிவங்கள் மற்றும் எழுத்தாளியின் அழகுணர்வால் உருவான இணைவடிவங்களைத் தவிர்த்தும் அடிப்படை எழுத்து வகைப்படுத்தப்பட வேண்டும். அத்துடன், அவ்வடிவங்களுடன் தொடர்புடைய தனித்துப் பயன்படுத்தப்படும் வடிவங்களையும் ஒப்பிட்டு வகைப்படுத்தி தொகுதிகள் அமைக்கப்பட வேண்டும். அடிப்படை வடிவங்கள், உயிர்க்குறியீடேற்ற அடிப்படை வடிவங்கள், கூட்டுவடிவங்கள் எனப்படும் இம்மூன்று வகை வடிவங்களில் சிந்து எழுத்தின் முதல் இரு வகைகள் மட்டுமே 60% அளவிற்குப்பயின்று வருகின்றன.[3] ஆயினும் பொதுவாகக் கூட்டெழுத்துகளின் சிறப்பான தோற்றம் கருதி சிந்து எழுத்தை இத்தகையக் கூட்டுவடிவங்களின் எழுத்துமுறை என்ற கருதுவது தவறு. மேற்கூறிய மூன்று வகைகளிலிருந்து தொகுக்கப்பட்ட அடிப்படை வடிவங்கள் அவற்றின் தொடர்புடைய வடிவங்களுடன் வகைப்படுத்தப்படுகின்றன.

தெரிவுசெய்து தொகுக்கப்பட்ட அடிப்படை வடிவங்கள்:

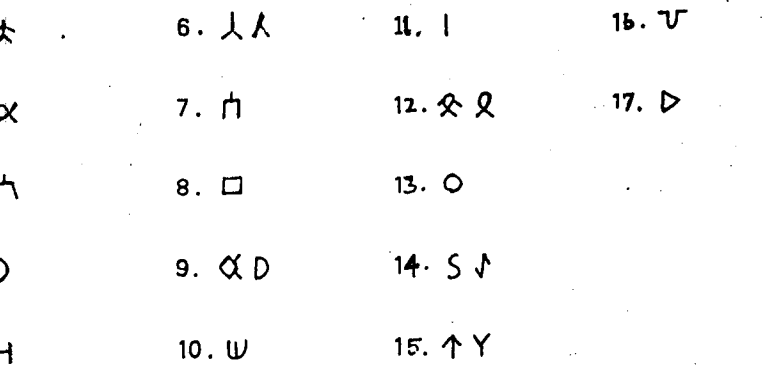


தொடர்புடைய வடிவங்கள் அவ்வற்றின் வடிவ ஒப்புமை அடிப்படையில் தொகுதிகளாக வகைப்படுத்தப்படுகின்றன.



மேற்காணும் சிந்து அடிப்படை எழுத்துகளும் அவற்றின் தரப்படுத்தப்பட்ட (Standardized) வடிவங்களும் இங்கு அமைக்கப்பட்டு, அனைத்துத் தொகுதிகளிலும் முதல் வடிவம் பிறவடிவங்களுக்கு அடிப்படையாகவும், தோற்றுவாயாகவும் இருப்பதை அறிகிறோம்.

3:1: இத்தகைய தரப்படுத்தப்பட்ட அடிப்படை வடிவங்கள் அனைத்தும் ஏறக்குறைய கி.மு. *2600* முதல் கி.மு. *1300* வரையிலும் ஏறக்குறைய *1300* ஆண்டுகள் வழக்கில் இருந்ததால் மாற்று வடிவங்களாகப் பெருக்கமடைந்துள்ளன. சிந்து எழுத்துமுறையில் கி.மு. *19*ஆம் நூற்றாண்டு அளவில் அந்நாகரிகம் முதல் பேரழிவைச் சந்திக்கும் வரை அவ்வடிவங்கள் எவ்விதமான மாற்றமுமின்றியுள்ளன. எனவே, இவ்வடிவங்களின் பெருக்கம்கூட இச்சிந்து எழுத்தில் முதலில் அறிமுக மாகும் கி.மு. *2350* அளவிற்கு முன்னரே நிகழ்ந்திருக்கவேண்டும். இவ்வாறு தொகுதிகள் வகைப்படுத்தப்பட்டு, தரப்படுத்தப்பட்ட வடிவங்கள் அனைத்தையும் தொகுத்துக் காணவேண்டும்.



இவையனைத்தும் ஓர் எழுத்து முறையின் அடிப்படை எழுத்து களான உயிர், மெய் எழுத்துகளை ஒப்பன. ஓர் உயிர்மெய்யெழுத்துத் தொகுதியை

எழுதும் பொது அடிப்படை வடிவங்களாக (Common basic signs) இவை உள்ளன. இவை அனைத்து மொழிகளுக்கும் பொதுவாகும். தமிழில் இத்தகைய மெய்த்தொகுதிகள் 18, உயிர்த் தொகுதிகள் 8 என 26 ஒலித் தொகுதிகள் உள்ளன.

3:2: சிந்து எழுத்து முறையின் அடிப்படை வடிவங்களை எவ்வகை எழுத்து களுடன் ஒப்பிடுவது என்று ஆராய வேண்டியுள்ளது. சிந்து எழுத்தும் அதற்குரிய நாகரிகமும் அழிந்த பின்னர். அதன் தொடர்ச்சியாக விளங்கிய ஓர் எழுத்துமுறையை, நாகரிகத்தை - அவற்றின் சுவடுகளைத் தேடவேண்டிய பொறுப்பு ஓர் ஆய்வாளனுக்குள்ளது. இதற்கு மிகச் சுருக்கமான விளக்கம் ஒன்றினைத் தரலாம். சிந்துவெளிநாகரிகம் எனப்படும் ஹாரப்பன் நாகரிகத்திற்கு முந்திய மிகப்பழைய (அரப்பாவுக்கு முந்திய) நாகரிகம் கிழக்கு பலுச்சிஸ்தான், மெகார்கர் மற்றும் தெற்கே ஆம்ரி ஆகிய இடங்களில் உருவானதற்கான ஆதாரங்கள் இன்று பேரளவில் திரட்டப்பட்டுள்ளன. பலுச்சிஸ்தானில்தான் நாடோடி இடையர்கள் நிலையான உழவர்களாகக் குடியமர்ந்தது உறுதிசெய்யப்பட்டுள்ளது. இந்த மெகார்கர் மற்றும் ஆம்ரியில் சிந்து நாகரிகத்தின் நான்கு வகை வழக்காறுகள் (Phases) அல்லது படிநிலைகள் கண்டுபிடிக்கப்பட்டுள்ளன.[4] நாடோடி இடையர்கள் நிலையான உழவர்களாகக் குடியமர்தல், சிற்றூர்களும் பெரு நகரங்களும் உருவாதல், முதிர்ந்த நாகரிகமாக மலர்தல், கடைசியாக அழிதல் என்ற நான்கு நிலைகள் இங்குள்ளன. எனவே, சிந்து நாகரிகத்தின் உயிர்நாடியான பலுசிஸ்தானில் காணப்படும் திராவிட மொழிக்குடும்பத்திற்குரிய பிராகுயி மொழி மிகச்சிறப்பான இடம்பெறுகிறது. சிந்துவெளி நாகரிகத்திற்கு வித்திட்ட பலுச்சிஸ்தானத்தில், அந்நாகரிகத்துக்கு உயிரூட்டிய பிராகுயி மொழியின் அமைவிடமே அம்மொழிதான் சிந்து நாகரிகத் திற்குரிய மொழி என்பதை உணர்த்தப் போதுமானது. இந்த வரலாறு கி.மு. 8000 அளவில் ஆரம்பமாகிறது. கி.மு. 3500 அளவில் அங்கு நகர நாகரிகம் தோன்றியது என்ற ஆய்வாளர்கள் கருத்துடன் அங்கே பிராகுயி முன்னிலை வகிக்கிறது. சோவியத் ஃபின்லாந்து ஆய்வாளர்களும் "சிந்து எழுத்தைப்படிக்கத் திராவிட மொழிகளிலேயே தொன்மை வாய்ந்ததும், பழைமையான இலக்கண இலக்கியங்களைக் கொண்டதுமான தமிழையே அடிப்படையாக கொள்ள வேண்டும்" என்றுரைக்கும் கருத்துரைகளும் இதனையே வலியுறுத்துகின்றன[5].

3:3: தமிழின் ஆதிவடிவத்தின் இறுதி நிலையைச் சங்க காலத் தமிழியில் காண்கிறோம். அவ்வாறே சங்ககால எழுத்துமுறையான தமிழியின் வடிவ வழக்கொழி வுடன் ஒரு செவ்வியல் எழுத்துமுறையின் முடிவுநிலையைக் காண்கிறோம். தமிழி எழுத்துமுறையின் வடிவங்கள் ஆய்வுக்குரியன. இன்று, ஆதிச்சநல்லூரில் மக்களின் வாழிட அகழாய்வில் தாழிக்குள் எழுதப்பெற்ற "தமிழி" எழுத்தின் காலம் கி.மு.5 ஆம் நூற்றாண்டென்றும், அப்புதை பொருட்கள் கி.மு. 1500 - 500 அளவிற்கு

உரியனவாகத் தொடக்கநிலை வெப்ப ஒளிர்மச் சோதனைகள் (Thermo lominiscence datings) உணர்த்துவதாக முனைவர் சத்தியமூர்த்தி கூறுகிறார்[6]. அதன்வழி தமிழி எழுத்து தென்னக எழுத்துமுறைக்குரிய தனித்தன்மை வாய்ந்தது என்றும், தமிழியின் காலமுறை வட இந்திய பிராமி எழுத்து முறையின் தோற்றுவாய் என்பதையும் உணரலாம். ஆய்வின் மிகத்தொடக்க காலத்திலேயே தமிழ் எழுத்தின் தொன்மையை உணர்த்த வந்த ஐ. மகாதேவன் அவர்கள் பழைமையான பட்டிப்புரோலு எழுத்துகள் தமிழியின் வழிவந்ததாகக் கருதுவது இக்கருத்தை உறுதிசெய்கிறது. இன்று அறியப்பெறும் நிலையில் தமிழி எழுத்து கி.மு.500 அளவுக்கு முன்னரே வழக்கில் இருந்தது என்பது ஐயமில்லாமல் உறுதிப்படுத்தப்பட்டுள்ளது. இதன் ஆரம்ப நிலையை பெட்துவாரகா மட்சாடி எழுத்துப்பொறிப்பிலும், இறுதிநிலையை யாழ்பாணம் ஆனய்க்கொட்டடி இருமொழி இரும்பு முத்திரையின் எழுத்திலும்காண முடிகிறது. இதை உறுதி செய்வதாக உள்ளன பெருமுக்கல் எழுத்துவடிவங்கள். அவை தமிழியின் எழுத்து வடிவ இயல்புகளுடன் அதன் உயிர்க்குறியீட்டு முறையையும் கொண்டுள்ளன. அதே சமயம் முதல் அகர வடிவம் சிந்துவிலிருந்து தமிழியாக மாற்றம் நிலையைத் தெளிவாகக் காட்டுகின்றது. இதுபற்றி விரிவாக இங்கு உரையாட விரும்பவில்லை. ஆயினும் பெட்துவாரகா, எழுத்து முறைக்குரிய கி.மு. 1300 அளவிலிருந்து, யாழ்ப்பாண முத்திரையின் ஏறக்குறைய கி.மு. 700 வரையிலான காலத்தில் சிந்து எழுத்து தமிழியாக மாறுதலுக்குள்ளாகி இருக்கவேண்டும்.

4:0: சிந்து எழுத்தின் வடிவமாற்ற நிலைகள் குறித்தும், அது தமிழியான வரலாறு குறித்தும் கூட இங்கு உரையாட வரவில்லை. ஆனால், தமிழி எழுத்து முறையே சிந்து எழுத்து வடிவங்களுடன் ஒப்பிடத்தக்க ஒற்றுமைப் பண்புகளைக் கொண்டுள்ளதென உறுதியாகக் கொள்ளலாம். முதலில் சிந்து - தமிழி எழுத்து வடிவங்களின் ஒப்பீட்டுப்பட்டியைக் காண்க: இங்கு சிந்து அடிப்படை எழுத்துடன் தமிழி எழுத்து வடிவங்களான உயிரும், மெய்யும் ஒப்பிட்டுக் காட்டப்பெற்றுள்ளன.

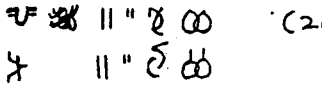
	சிந்து		தமிழி			சிந்து		தமிழி	
1.				க	10				ம
2.				ங	11.				ய
3.				ச	12.				ர
4.				ஞ	13.				ழ
5.				ட	14.				வ
6.				ண	15.				ஐ
					16				ன
7.				த	17.				அ
8.				ந	18				இ
9				ப					

இவ்விரு எழுத்துமுறைகளும், எழுத்து வடிவங்கள் காட்டும் ஒப்புமைகளின் அடிப்படையில் மிக்க உறவுடையனவாகக் காணுகின்றன. வடிவங்களின் ஒப்பியல்புகளுடன், அவ்வடிவங்கள் ஒலிநிலையிலும் ஒப்புடையனவாக உள்ளன. ஒரு சில வடிவங்கள் மாறாமல் அப்படியே உள்ளன. சில சற்றே மாறியுள்ளன. மற்றும் சில வளர்ச்சி மாற்றங்களுக்கு உள்ளாகியுள்ளன. இத்தகைய மாற்றங்களை ஒப்பீட்டுப்பட்டியைக் கொண்டு உணரலாம். இங்கு விரிவாக விளக்க இடமில்லை. இருப்பினும் ச,ஞ,ட,ண த,ய,ர,வ,ற போன்ற எழுத்துகள் பெரிய மாற்றங்கள் ஏதுமின்றியுள்ளன. க,ங,ந,ப,ம ஆகியன சற்றே மாறியுள்ளன. ழ ன அ இ என்பன வளர்ச்சிக்குரிய மாற்றங்களை அடைந்துள்ளன. ஆயினும் இவை இனங்காணத்தக்க அளவே மாற்றம் அடைந்துள்ளன என்பதே உண்மை. இவ்வடிவங்களை மேலும் ஆய்வுக்கு உட்படுத்தி, விரிவுபடுத்தி, பிற விடுபட்ட எழுத்து வடிவங்களையும் இனங்காண இயலும். ஆயினும், அடிப்படை ஒப்புமை காணப்பட்ட இவ்வடிவங்களையும் ஒலிகளையும் மட்டுமே கொண்டு நாம் சில சிந்து முத்திரைகளையேனும் படித்துணர முடியும். தமிழ் எழுத்துகளில் ல - ள எழுத்து வடிவங்களுடன் ஒப்பிட்டுரைக்கத்தக்க சிந்து எழுத்து வடிவங்கள் காணப்பெறவில்லை. ஆனால், சிந்து மீன்வடிவமே தமிழியில் ழகரமாக மாற்றமுற்றது என்றுரைக்கத் தக்கவாறு உள்ளது.

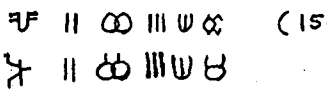
4:2: மேற்காணும் அடிப்படை எழுத்துகளைக் கொண்டு சிந்து எழுத்துகளைப்படிக்க இயலுமா? என்ற கேள்வி எழுகிறது. அதற்கான ஆய்வு முயற்சியாக நாம் சில முத்திரைகளைத் தேர்வு செய்து ஒப்பிட்டுக் காட்டமுடியும் (சிந்து முத்திரை - தமிழி ஒப்பீட்டுப்பட்டியைக் காண்க.) இவற்றில் *(1)* இரண்டு மெய்கள் இணையாக உள்ள இடத்தில் அவற்றை ஈறொற்று உடனிலை மெய்ம்மயக்கமாகவும் படிக்க வேண்டும் (எ-டு : ட்ட் - ட்ட, வ்வ் - வ்வ) *(2)* சிந்து அடிப்படை வடிவங்களின் மீது இடப்பெறும் சிறுகீற்றுக் கோடுகளுக்கு ஏற்ப அவற்றை உயிர்மெய்யாகப்படிக்க வேண்டும். (எ-டு) அடிப்படை வடிவின் மீது ஒரு சிறு கீற்றுக்கோடு அகரம் இணைந்த உயிர்மெய், 2 கோடு - ஆ, 3 கோடு – இ இணந்த உயிர்க்குறியீடு *(3)* அவ்வாறே தமிழி எழுத்தில் உள்ள உயிர்க்குறியீட்டை அவ்வெழுத்து முறைக்கென்று உள்ள உயிர்க் குறியீட்டுமுறைப்படிப்படிக்கவும். சிந்து - தமிழி எழுத்து உயிர்க்குறியீடுகளிடையே சிறு வேறுபாடு உள்ளது. சிந்துவில் உயிரெழுத்துக்கேற்ற எண்ணிக்கையில் குறியீடு இடம்பெற்றுள்ளது. ஆனால் தமிழியில் ஒரே சிறு கீற்றுக்கோடு வெவ்வேறு இடத்தில் இடம்பெற்று இடத்துக்கேற்ப ஒவ்வொரு உயிர்மெய்யாகக் கொள்ளப்படுகிறது *(4)* சிந்து எழுத்தின் மீன் வடிவம் தமிழியின் ழகரத்துக் ஒப்பாகக் காட்டப்பட்டுள்ளது. தமிழியின் ல -ள எழுத்துக்களுக்கு இணையான வடிவங்கள் சிந்துவில் இல்லை. இந்த எழுத்துகளுக்குரிய வடிவங்கள் பிற்காலத்தில்தான் உருவாக்கப்பட்டிருக்க வேண்டும். சிந்துவிலும்கூட இந்த ல-ழ-ள எழுத்துகளுக்குத் தனித்தனி வடிவங்கள் அமைக்காமல் மீன் வடிவத்தின் சிறப்புக்கருதி அதனை மேற்காணும் மூன்று எழுத்துகளை

எழுதப்பயன்படுத்தினர் என்று கருத வேண்டியுள்ளது. இங்கு அதுபற்றி விரிவாக ஆராய இடமில்லை.

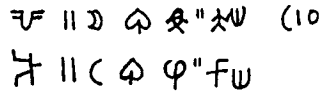
சிந்து - தமிழி அடிப்படை வடிவங்களிடையே உள்ள ஒப்புமைப் பண்புகளின் அடிப்படையில் அதனைப்படிக்கும் முறையை இங்கு விளக்க வேண்டும். எ-டு. :

1.  (2002)

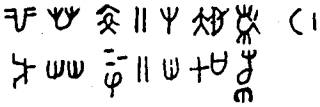
ஆ எறும்ப இரு ட்ட வ்வ் = வவ் அய் இரு எறும்ப் ஆ

2  (1541)

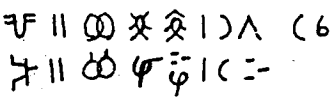
ஆ இரு வ்வ மூ ய் ம = மய் மூவ்வன் இரு ஆ

3  (1042)

ஆ இரு ட அரசு ழ" கய = கய" கயழ அரசுட இரு ஆ
கய" கயல அரசுடய இரு ஆ

4  (1060)

ஆ ய்ய இழ இருய கம சய்ய = சய்ய கம்ய இரு இழய்ய ஆ
: செய்ய கமய்ய இரு இளய்ய ஆ

5  (6306)

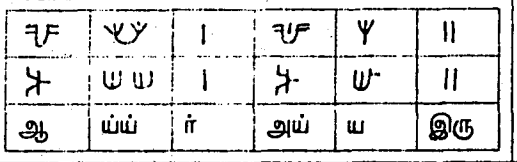
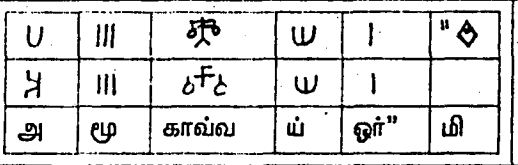
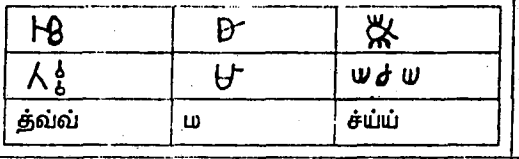
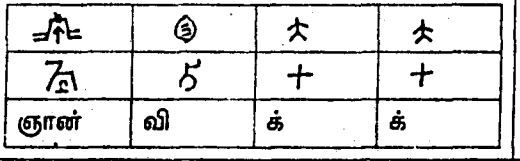
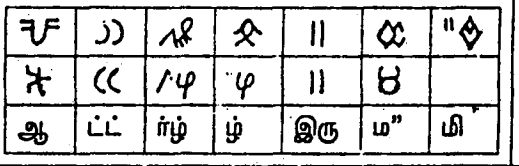
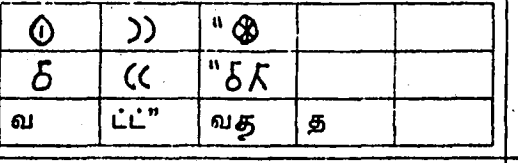
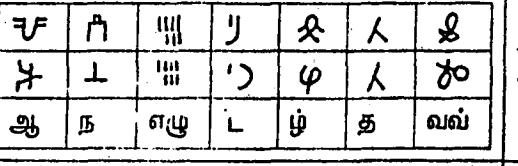
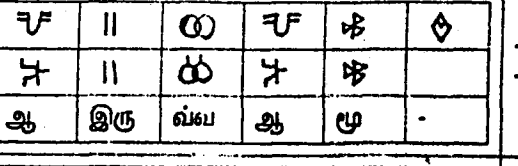
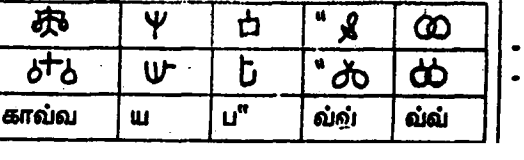
(மேலும் சில முத்திரைகள் தனிப்பட்டியலில்)

இந்த எடுத்துக்காட்டுகளில் முத்திரை எழுத்துகளுக்கு ஈடாகத் தமிழி எழுத்துகள் எழுதிக்காட்டப் பெற்றுள்ளன. ஆனால், போன்ற சொல்லுருவன்கள் அப்படியே எழுதப்பெற்றுள்ளன. வடிவ ஒப்புமையுடைய எழுத்துகள் மட்டும் அவ்வாறே பொருந்துவனவாக எழுதப் பெற்றுள்ளன. அவற்றின் ஒலிநிலை எழுத்துகளில் முத்திரைக் கருத்து விளக்கம் பெற்றுள்ளது. இவ்வாறு 5 முத்திரைகள் மொழியாக்கம் செய்து கொடுக்கப்பட்டுள்ளன. அவை வருமாறு.

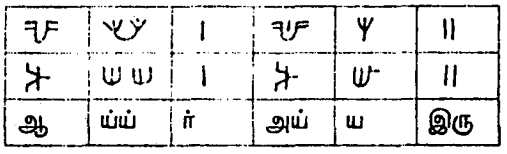
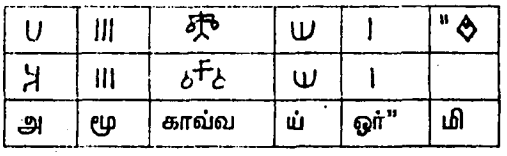
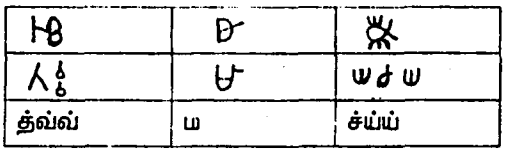
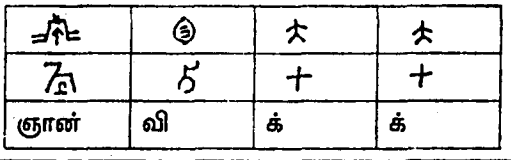
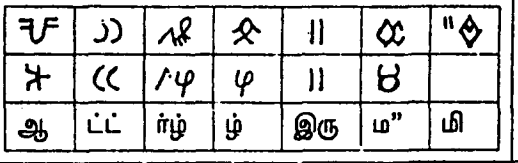
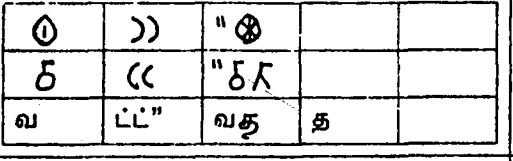
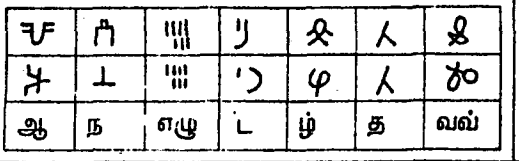
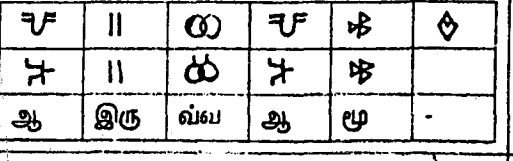
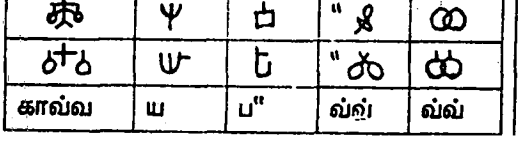
1. வவ்ட்ட இரு எரும்ப ஆ
=வ்வவிட்ட இரு எருமை ஆ

2. மய் மூவ்வ இரு ஆ
=மய் மூவ்வன் இரு ஆ

சிந்து - தமிழி இணை வழிவழங்கள் ஒப்பீட்டுப் பட்டி - 1

1.	2687	 ஆ ய்ய் ர் அய் ய இரு	- இரும அய்ரிய்ய ஆ - இரும அயிரிய்ய ஆ
2.	4316	 அ மூ காவ்வ ய் ஒர்" மி	- ஒர்ய் காவ்வ மூசு - ஒர்ய் காவ்வ மூவ
3.	4280	 த்வ்வ் ம ச்ய்ய்	- ச்ய்ய் மவ்வத் - செய்ய மவ்வத்தன்
4.	1084	 ஞான் வி க் க்	- ஞான்விக்க் - ஞானவிக்கு
5.	1023	 ஆ ட்ட் ர்ழ் ழ் இரு ம" மி	- மி" ம இருழ் ழர்ட்ட ஆ - மி" மிம இருள்ளரிட்ட ஆ
6.	1221	 வ ட்ட்" வத த	- தவ" ட்டவ - தவ" தவட்டவ
7.	1211	 ஆ ந எழு ட ழ் த வவ்	- வவ்தல்ட' எழுந ஆ - வவ்வு தலுடய எழுந ஆ
8.	1215	 ஆ இரு வ்வ ஆ மூ -	- மிமூ ஆவ்வ இரு ஆ - மி மூ ஆவ்வ இரு ஆ
9.	1315	 காவ்வ ய ப" வ்வ் வ்வ்	- வவ்வ்வ" பய காவ்வ - வவ்வுவ்வ" பய்ய காவ்வ

சிந்து - தமிழி இணை வழிவங்கள் ஒப்பீட்டுப் பட்டி - 1

1.	2687	 ஆ யய் ர் அய் ய இரு	- இருய அய்ரிய்ய ஆ - இருய அயிரிய்ய ஆ
2.	4316	 அ மூ காவ்வ ய் ஒர்" மி	- ஒர்ய் காவ்வ மூசு - ஒர்ய் காவ்வ மூவ
3.	4280	 த்வ்வ் ம ச்ய்ய்	- ச்ய்ய் மவ்வத் - செய்ய மவ்வத்தன்
4.	1084	 ஞான் வி க் க்	- ஞான்விக்க் - ஞானவிக்கு
5.	1023	 ஆ ட்ட் ர்ழ் ழ் இரு ம" மி	- மி" ம இருழ் ழர்ட்ட ஆ - மி" மிம இருள்ளரிட்ட ஆ
6.	1221	 வ ட்ட்" வத் த	- தவ" ட்டவ - தவ" தவட்டவ
7.	1211	 ஆ ந எழு ட ழ் த வவ்	- வவ்தல்ட' எழுந ஆ - வவ்வு தலுடய எழுந ஆ
8.	1215	 ஆ இரு வ்வ ஆ மூ -	- மிமூ ஆவ்வ இரு ஆ - மி மூ ஆவ்வ இரு ஆ
9.	1315	 காவ்வ ய ப" வ்வ்ய் வ்வ்	- வவ்வ்வ" பய காவ்வ - வவ்வுவ்வ" பய்ய காவ்வ

3. கய ''கயழ அரசுட இரு ஆ
= கய'' கயல அரசுடய இரு ஆ

4. ச்ய்ய கமய இரு இழய்ய ஆ
=செய்ய கமய்ய இரு இளய்ய ஆ

5. இடர் இழ்ழாவ்வ இரு ஆ
= இடர் இல்லாவ்வ இரு ஆ

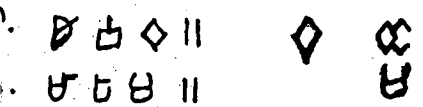
இம்முத்திரைகள் தெளிவான பொருளுடையனவாக உள்ளன. (1) விட்டிசைகள் (வவ்ட்ட = வவ்விட்ட) (2) பெயர்களின் பொருளியைத்தல் (எறும்ப - எரும்ப - எருமய்) (3 ஒலிப்புக்குறைவு (மூவ்வ - மூவ்வன்) அரசுட - அரசுடய (4) சிந்து எழுத்துக்குரிய மெய்களை உரிய உயிர்மெய்களாகப் படிக்கும்முறை (ச்ய்ய = சய்ய - செய்ய) (5) மெய்-உயிர்மெய்களை உணர்ந்து ஒற்றை இரட்டித்துப்படித்தல் (கமய - கமய்ய) ஆகிய இயல்புகள் உள்ளன. இவை தொன்மை மொழிகளைப் படிக்கும்போது இயல்பாக எதிர்ப்படுவனவே. இவற்றைத் தவிர மிகச் சிறப்பாக உற்றுணரத் தக்கது, முகர எழுத்தின் வழக்கு. சிந்து எழுத்தின்மீன் வடிவம் பனையோலையில் எழுதத் தக்கவாறு அடைந்த மாற்றமே தமிழி எழுத்து முகரம். இது கீழிருந்து மேல் நோக்கி எழுதப்பட்ட நிலை மாறி, வலப்புறம் சாய்ந்து இடமிருந்து வலமாக எழுதப்படுவதைக் காண்கிறோம்.. மேலும் பொருள் நிலைக்குரிய சொல்லமைப்பில் முகரம் லகரமாக (1042, 6306) இரண்டு முத்திரைகளிலும், ளகரம் முகரமாக (1060) ஒரே ஒரு முத்திரையிலும் எழுதப்பட்டுள்ளது. இதன் மூலம் சிந்து எழுத்துமுறையில் மீன் வடிவம் கொண்டு லகர முகர ளகரங்களாகிய 3 எழுத்துகளையும், ஒலிகளையும் ஒரே வடிவத்தால் எழுதி வந்தனரென்று தெளிவாகிறது. இதன் உண்மையை மற்ற முத்திரைகளும் காட்டுகின்றன. எனவே, மீன் வடிவ எழுத்தை இடநிலைக்கேற்ப, பொருள்நிலைக்கேற்ப ல - ழ - ள என்னும் மூன்று எழுத்துகளாகப் படிக்க வேண்டும் என்ற முறை இருந்ததை உணரமுடிகிறது. இது ஒரு வியப்பளிக்கும் புதிய செய்திதான்.

4:3: மேற்காணும் முத்திரை எழுத்துகள் தெளிவான பொருள்நிலையில் படிக்கப்பட்டிருக்கும் நிலையை உணரமுடிகிறது. இதன் அடிப்படை மீது நாம் விரிவான ஆய்வுகள் மேற்கொள்வது சிந்து எழுத்தை முழுதும் புரிந்து கொள்ளவும் படிந்துணரவும் வழிதரும். அதற்கு நாம் அடிப்படை எழுத்துகளை முழுமையாக ஆராய்ந்து அறிவது இன்றியமையாத ஒன்றாகும். சிந்து முத்திரைகளில் ஓரிரு வடிவங்கள் மாறுபட்ட நிலையில் உள்ளதால் முத்திரை எழுத்துகளைத் தமிழி எழுத்துகளுடன் ஒப்பிடுகையில் தமிழியில் ஒப்பீட்டு வடிவமில்லாமல் விடுபட்டுள்ளமையை அறியலாம். ஆயினும் ஒப்பீட்டுக்குத் தொடர்புடைய

வடிவங்கள் மிகச் சிறப்பாகப் பொருந்தியுள்ளதால் சிந்து எழுத்து அடிப்படை வடிவங்களின் ஒப்புமைப்பண்பு வடிவ - ஒலி - பொருள் நிலைகளில் ஆய்வுக்குரிய பொருளாகத் தேர்வுபெறும் தகுதி பெறுவதை நாம் தெளிவுபட அறிகிறோம். முத்திரை எழுத்து தமிழி எழுத்து ஒப்பீட்டுப் பட்டியில் காணப்பெறும் மேலதிக முத்திரைகள் யாவும் அவ்வாறு சிறப்பான ஆய்வுக்குரிய பொருளாக விளங்குவதைக் காணலாம். நாம் உணர்ந்துள்ள ஒப்பீட்டின் அடிப்படையில் இனி நாம் சிந்து எழுத்து ஒலி நிலைகளை அந்தச் சிந்து எழுத்து வடிவங்களுக்குப் பொருத்தி ஆராயலாம். ஒலிநிலைகளின் மீட்டுருவாக்கம் வருமாறு.

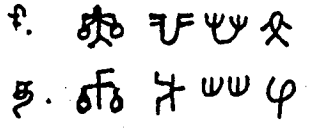
சிந்து: தரப்படுத்தியவை

2519 : சி.



த.

சிந்து: தரப்படுத்தியவை

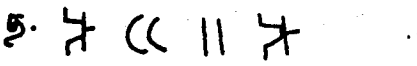


மேற்காணும் சிந்து எழுத்து அடிப்படை வடிவங்களின் அடிப்படையில் இடையிடும் பிற எழுத்து வடிவங்களையும் இனங்காண இயலும். எ-டு :

2717 : சி.



த.



மேல்வரிசையில் வலமிருந்து இரண்டாவது எழுத்து டைமன் வடிவில் உள்ளது. இவ்வடிவம் வேறு எந்த மெய்யுடனும் பொருந்தவில்லை. அதே சமயம் நண்டுவடிவ எழுத்துடன் ஒப்ப உள்ளது. இந்தத் சொல்லின் பொருளும் இந்த மெய்யுடன் கூடிய சொல்லுக்கு அன்றி வேறு எதற்கும் பொருந்தாது. தமிழியின் மகரமெய் இந்தச் சிந்து மகர எழுத்துடன் ஒப்ப உள்ளது. எனவே இந்த இடையிடும் எழுத்தும் ம் - ம என்பது உறுதியாகிறது. அதுபோல அய் என்னும் உயிரெழுத்தும். எ-டு :

சிந்து எழுத்தில் என இரண்டு வடிவங்கள் உள்ளன. இவை எழுத வேண்டும் ஆ என்ற வடிவை அடிப்படையாகக் கொண்டவை. பசுவின் தலைவடிவமாக இவ்வெழுத்து உள்ளது. இந்த நெட்டுயிரை அடிப்படையாகக் கொண்டு இவ்விரு எழுத்துகளும் உருவாக்கப்பட்டுள்ளன. எனவே, இவை உயிருடன் தொடர்புடைய எழுத்துகளாகவே இருக்க வேண்டும். ஒப்பீட்டு எழுத்தாய்வு இவை அய்,அவ் என்று உணர்த்துகின்றன. தமிழ் மரபில் அய், அவ் என்பன நெட்டுயிர்களாதலால் ஆகாரத்தை அடிப்படையாகக் கொண்டு அமைத்துள்ளனர். இவ்வாறு ஒப்பீட்டாய்வின் மூலம் மற்ற எழுத்துகளையும் இனங்காண முடியுமென ஆய்வு காட்டுகிறது.

5:0: சிந்து எழுத்து தமிழி எழுத்து ஒப்புமையின் அடிப்படையில் வெற்றிகரமாகப் படிக்கப்படுவதற்கு மிக்க வாய்ப்பிருப்பதாக இந்த ஆய்வறிக்கை மூலம் உணரலாம். மேலும், சிந்து எழுத்துகளில் உள்ள பிற உயிர், மெய் எழுத்துகளும் கண்டுபிடிக்கப்படலாம். ஆயினும் நமது சுருக்க ஆய்வு 18 மெய்கள் சிந்து எழுத்தில் காணப்படுவதை அறிவிக்கிறது. அ,இ, அய், அவ் உயிர்களும் இருப்பதை அறியமுடிகிறது. படிக்கப்பட்ட வடிவ - ஒலி - பொருள் நிலையில் சிந்து எழுத்து தமிழ் எழுத்துமுறை என்பதை உணர்த்துகிறது. சிந்து எழுத்துமுறை ஒலியெழுத்தல்ல என்று கங்கணம் கட்டிக்கொண்டு வாதாடுவோருக்கு நான் இங்கு பதிலளிக்க விரும்பவில்லை காரணம், இந்தச் சிற்றாய்வு உரிய பதிலாகிறது.

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INDUS SIGNS FOUND IN THE POTTERY COLLECTION OF THE GOVERNMENT MUSEUM, MADURAI

P. Sam Sathiaraj

Introduction :

The signs of the Indus Valley have been attested in thousands of pots and potsherds all over Tamilnadu. These signs are commonly called as Graffiti marks. Many scholars have tried to decipher the signs and interpreted their findings in different ways. Further, they have tried to trace their links with the Indus signs testifying their close similarities. In this paper an attempt is made to attest the presence of Indus signs from the megalithic pottery collection of the Government Museum, Madurai.

Field Centres of the Pottery Collection:

The Pottery collection of the Government Museum, Madurai represent Megalithic potsherds and burial pottery collection from Thiruthangal, Sivakasi, Kariseri and Koothanatham of Virudhunagar District and pottery from Tirumangalam., Chinnarasaakkur and Sellur of Madurai District and Narayanathevanpatti of Theni District. A few pottery from Adhichanallur (Tuticorin District) and Mohanur (Namakkal District) are also represented in the collection.

The potsherds were collected by field exploration and the burial potteries were collected through treasure trove.

Types of Pottery in the Collection:

The pottery in the collection of Government Museum, Madurai may be classified as Buff ware, Russet coated ware, Black ware and Black and Red ware.

Indus Signs attested:

Most of the potteries show single graffiti marks and few with ligatured graffiti. The prominent among them are grouped below:

Graffiti marks from Virudhunagar Districts:

1. Arrowhead
2. Cross lines represent the numeral Six
3. Stylised fish marks

Graffiti marks from Madurai District:

1. Arrow mark with a middle line representing a Hill
2. Multiple cross marks

Graffiti marks from Theni District:

1. Converging straight lines with cross bands
2. Converging straight lines without cross bands
3. Fish graffiti - X-ray type showing the skeleton. This sign is very peculiar and not identified by other scholars.

Graffiti marks from Mohanur:

1. Converging curved lines

Conclusion

From the above findings it is inferred that many of the graffiti marks resemble the Indus signs. Even though some marks are different they are conceived as having close affinity with Indus signs.

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HOLISTIC APPROACH TO DATING IN ANCIENT HISTORY ESPECIALLY INDIAN HISTORY WITH SPECIAL REFERENCE TO THE INDUS SCRIPT

Dr. R. Kannan

Introduction

"Research is to see what everybody has seen and to think what nobody has thought" (Albert Szent Gyo Rigi from Srinivasan K.R., 1988,p.1). What we think may be acceptable or otherwise, but we should not shy away from original thought. Nothing dared, nothing gained.

PROBLEMS OF DATES IN ANCIENT HISTORY ESPECIALLY INDUS SCRIPT

Ancient Indian history especially suffers from the problem of lack of an agreed deciphered language and therefore settled dates. This problem exists with ancient Egypt, the Incas and other ancient civilisations. The dates given by Archaeologists varies as new finds keep coming up, pushing the findings regarding the period of the civilisation concerned further back. Srinivasan contends that according to cryptographic theory, the Harappan script can be deciphered only if one can reduce it to some known language (Srinivasan K.R., 1988,p.1). The 'script' still remains unknown. Thus the culture still remains in the realm of Proto-History and can enter the realm of History only when their 'writing' or 'record' is deciphered and the message they communicate is intelligible to all sections of scholars.

There is no counterpart to the Rosetta Stone discovered by Bouchard in 1799 AD, which contained the same message in Greek, Egyptian Hieroglyphs and another language in the Indus Valley settlements discovered so far.

Several historians like I. Mahadevan, Ojha, Mathivanan and scentists claim to have deciphered the Indus Valley script. Dr.N.S.Rajaram claims to have deciphered a script even more ancient to the Indus script by computer simulation, which he feels belongs to the world's most ancient civilisation [Rajaram N.S., 2000(l), p. 121].

The Vedic-Epic culture or pre-Jaina and pre-Buddhist times remains an enigma equally (Srinivasan K.R., 1988,p.2). This confusion regarding dates appears to extend till the time of the Gupta dynasty in North India (Ramachandran V.G., 1998, p.46).

This is because history is viewed through the eyes of foreigners and all the writings made by them are taken as authentic without attempting to sift even subjective or spatial bias. Right from Megasthenes to Sir Mortimer Wheeler the views of foreign writers are given credence while in the case of our own writers, exaggeration is ascribed. Swami Vivekananda stresses reliance on our writers and use of Astrology and Astronomy as the national method of historical research. (Sakhyananda, 1998, p. 23). The history that we have been handed down is the result of efforts of writers with diverse motivations.

For example, the British wanted to rule India by their famous *Divide et Impera* (Divide and Rule) strategy. They formulated theories like the Aryan and the so called Dravidian races in India in pursuance of this strategy. There is no reference to a so called Dravidian race in any ancient book, Indian or foreign. The word Dravidian came into political usage only after 1800 AD (Ramachandran V.G., 1998, p 47).

They invented the theory that the Aryans (wise people) came into India only about 1500 BC.

The rivers, too, seem to have been shifting beds and courses and the Saraswati and the Drishadvati, the then tributaries of the Indus, have since dried up (Srinivasan K.R., 1988, p.5). This is borne out by Remote Sensing.

Epigraphy

Analysing our ancient history, it is felt that the 'vocal' and 'audible' Vedic-Aryan phenomenon contrasted with the Harappan ethos. They have a 'script' of their own and not a language, a factor which make us call them in a way 'mute' yet, since there is no counterpart of the Rosetta Stone (Srinivasan K.R., 1988, p.21).

Even a Greek writer in circa 1970 AD goes part of the way to recognise that there are no different races but the same people. He states that the first Aryans in

India adopted the Harappan script; but as they, unlike the Greeks, did not also appropriate the economic system developed by the earlier culture, the script having lost its raison d'etre, was confined to owner's marks (seals) and died out (Parpola Asko, 1973, p.21).

In 1934, Vilmos Hevesy, a Hungarian Engineer turned amateur Epigraphist found 160 similarities of the Indus script with the Easter Island script. This connection was rejected by the 'Normal' Epigraphist (Rajagopalan R., 1995, p.62). The connection with Easter Island confirms Hancock's theory of a great maritime civilisation in the Sapta Rishi Era circa 10,000 BC.

Dr. M. Ramachandran & Dr. R. Madhivanan have read in the inscriptions of Indus Valley seals many Tamil proper names congruent with those in the ancient Tamil literature and some with unusual Tamil proper names found in use even now (Mahalingam Dr.N., 1998, p. 385). Prof. Madhivanan, during my discussions with him, claims to have seen Indus script in a cave near Villupuram, Tamilnadu. He draws attention to an overhanging rock near Keelvalai village in then South Arcot district, Tamilnadu with paintings of boats with four sailors below which an inscription in Indus script is found ((Mathivanan R, 1995, pp. 12-13).

There is also an Indus inscription found in Andhra Pradesh which shows that Indus was an all-India civilisation ((Mathivanan R, 1995, p. 14). The Brahmi script originated as 'Tamili' in Tamilnadu and spread North. Dr. Abdul Huq and P.R. Srininvasan, Ex- Director of Epigraphical Survey of India both agree with this view (Mathivanan R, 1995, p. 16). Sanskrit language adopted Tamil grammar known as 'Aindram' grammar (Mathivanan R, 1995, p. 19). This he feels conclusively proves that the Indus people migrated from Tamilnadu. The Swastika symbol is an Indus symbol meaning 'OM'. This was spread throughout the ancient civilisations of the world. It is found in Great Britain as 'Hammer of God - Thor' in Scandinavia, in Japan, China, Central and South America etc (Mathivanan R, 1995, p. 32). This brings us to the Sapta Rishi Era thesis of a great world-wide maritime civilisation.

In the 1950s and 1960s, the Indus Valley civilisation was dated around 1000-1500 BC. With more excavation, this has now been pushed back. If the areas indicated in our Purana are excavated and with luck, the astronomical dating may be corroborated by Archaeology. To rely on Archaeology alone is being dogmatic.

Conclusion

The results of our holistic approach shows the unreliability of Linguistics for dating.

There appears to have been a huge landmass Lemuria that has since submerged into the sea as a result of sea level changes. This is a concept of the ancient Tamils and its role as a cradle of civilisation is established by a combination of Anthropology, Genetics and Tamil literature.

The geographical extent as could be deduced from their extent and distribution, stretches from the foot hills of the Himalayas embracing the upper reaches of the Indus (Sindhu) and the Saraswati and the Drishadvati river systems, down the rivers themselves, and up to the lower reaches of the Narmada and the Tapti, and one can say even to the head of the Godavari basin, if we include the recently discovered Daimabad site, on the south (Srinivasan K.R., 1988, p.4). It is felt that using magnetic methods for locating underwater metallic objects, the seismic profiler and side scan sonar surveys could locate civilisation along side Andhra coast that is now submerged (Rao T.C.S., 1988, p.73). If the Cauvery valley is probed, they may yield some sites.

The 2004 tsunami helped to uncover a new laterite sea shore temple at Mahabalipuram. This validates the Seven Pagoda theory referred to by Edgar Thurston, then Superintendent of the Madras Government Museum in his book on the Madras Presidency. This was previously thought of as a fable or legend.

In 2002, the underwater exploration off the Gulf of Cambay showed a submerged civilisation of about 8000 BC. This writer has seen some of the artefacts recovered.

The exploration and excavation in Haryana near Kurukshetra in 2004 by Shri L.S.Rao, Superintending Archaeologist, ASI shows that the Mehragarh pre-Indus phase (circa 8000 BC) existed in present India also. This was previously thought of as confined to the old Indus-Saraswati basin. But it is now at the Yamuna basin. He explained this clearly with artefacts to this writer at the Government Museum during his visit.

The Celt with some *Brahmi* and some Indus type letters got as surface find and kept by the State Department of Archaeology validates the theory of this

writer first propounded in 1999 that if excavation is undertaken along the Cauvery after magnetic resonance imaging the Indus civilisation will be found to have extended to Kanyakumari. If it had been in bi-script like the Bhattiprolu casket kept in the Government Museum, Chennai it would have been a still greater find.

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INDUS TO TAMARAPARANI

Dr. T. Satyamurthy

The later part of the last century witnessed many significant archaeological discoveries in India. In post independence period explorations conducted in India had yielded good results and Archaeologists could encounter as much as 250 sites of Indus culture.

Typologically these sites cover the common features noticed in Harappa and hence named as Harappan culture. They were basically riverside civilization with various urban characters.

The scenario in the far south in India is not different from the north but the archaeological field works compared to north in the south were very less in the post independence era.

However, the concentration here was to trace the root of Iron Age culture and record its ramifications. The superimposed iron copper materials in the southern Indian Sites had added more complexity to the magnitude of the problem of identifying two different metal age cultures. Among the many such sites that had yielded both the metals the series of Sites explored by A.Rea on the banks of Tamaraparani during the beginning of the last century draw our attention to find a solution to the problem.

Previous work

Adichchanallur (8° 37′ 47.6″ N; 77 °52′ 34.9′E), also known as Adittanallur, is situated on the right bank of Tamaraparani River, in the Tuttukudi District of Tamil Nadu. The ancient site at Adichanallur was first discovered by Dr. Jagor of Berlin during 1876, and later M.Louis Lapicque of Paris, explored the area and examined the collections. He arrived at a conclusion that the remains belonged to proto Dravidian race, but the very extensive series of archaeological explorations was conducted by Alexander Rea, then Superintendent, Archaeological Survey, Southern circle, Madras during 1903-04. Along the course of the river Tamaraparani, he reported as much as 38 ancient sites including Adichanallur.

The site extends over 60 acres of land, and Alexander Rea excavated at the centre of the site. According to the Excavator "the urns encountered were at an average distance of about 1m apart and two to three m or more below the surface. Some were found placed over the other ones. An idea of the "deposits which exist in the whole area may thus be obtained, as an acre probably holds over thousand urns". The urns excavated were large, one legged, elongated, globular pots of thick red earthen ware one meter dia and 1.25 m high. Rims are generally plain, but some have oblique triangular designs made with thumb impressions. "Most of them have flat bottomed conical cover wherever they are found broken the urns are found filled with stones or soil otherwise they were not filled with but kept with remains only. Some urns have hook like horn projections in side the rim, evidently for hanging or suspending pots or other articles. There are both secondary and primary burials but the latter types are very few. In large urns only complete bones of the skeleton are encountered, and it is obvious that the body had been set inside in a squatting at sitting position".

There are instances of urns with out any skeletal remains but with potteries and the cases of urns with out associated potteries are also not wanting. Potteries and other associated metal objects were found both inside the urns and outside also. Some urns are reported to have traces of ashes and in the absence of charcoal it cannot be concluded as the result of cremation but were apparently due to the combustion of wood used during some ceremony of burial. Some urns had potteries kept outside and nothing inside, and others vice versa.

The numbers of urns excavated were not reported. Iron objects were encountered mostly inside the urns, but not invariably, some instances were reported where one object was placed inside and a half a dozen or so outside. Implements, arms, or lamps in iron are generally found in conjunction with bronzes, mostly placed outside, but they are found inside also.

The Bronze objects discovered include Bowls, Bowl with a sieve cup attached, Bowl with lines around the body, bands around the body, and with many such designs; miniature jar, top of jar with cylindrical lid with knob; cup, Sleeve cup with wide bowl; Flat plate, Disc with concentric circles, Ring stand, top portion of a large pot, Ring stand, hollow plate, *Kinnam*, a bowl with concave sides, *Kudam* a pot with narrow neck, vase stand, with four rams having long twisted horns radiating from the centre of the base; Terminal having a central upright bar with globular bulbs on the top, Terminal with twelve stems branching upward from

the bottom in a curve and each terminating in a circular disc; Terminal fragment, having five curved stems surmounted by (pointed pear shaped) buds, a *kalayam* like bulbous body surmounted by a pointed knob; Vase stand with two tigers standing on the base; Large hollow bulb with curved pointed knob; Antelope with one of the legs missing, cock, Buffaloes with long curved horns; Dog with curved tail, Bell ornaments for affixing to the anklets of the dancers, series of Bangles, A series of three stylus or rods; Bronze necklaces consisting of thin wire rings, and Bangles.

Iron objects encountered include implements solid and flat tapered to the sharp point, flat chisels with long triangular haft, *Trisulam* (Trident), Spear with concave and sharp edges; Double edged swords, and swords with various curved blades tapering to a point; Barbed Javelins, Lances of different types, a curious weapon formed like a lance with out sharp sides; small dagger, Barbed arrow heads, Daggers with tapering point; Hatche with broad cutting edge; curious article with tapering blade with six holes at the bottom indicating that it was reverted to some other object; Knives double edged, Arrowhead, Reaping hooks or curved knives of various forms, axes, chisel of peculiar shapes like angular chisels tapering to a point;Sancer lamps of different types, *Sulams* or spearheads; Spade locally known as *Mammuti* and Iron pendants. , Besides above objects 31 Miscellaneous objects like Bangles, a bell, nails,a small cylindrical box were also discovered.

The site had yielded as much as 20 gold diadems. Most of them are oval in shape and some of them have thin strips of gold extending beyond each extremity. Few of them are plain, but most of them have repose designs of dots. Interestingly thin such bronze folded diadems were also reported from the site.

The burial potteries include coarse red ware pyriform shaped urns varying in height from 70 cms to 1 m. The body of the urns taper to a narrow flat bottom with thick round beaded rim, some of them are decorated with thumb mark ornament around the neck.

In some of the urns they terminate as loops. There are instances where curved hooks are seen below the rim just 0.2 m from the top. Among the other funerary assemblages the vessels are mostly black and red ware and the objects like ring stand lids are black ware. In shape and sizes they exhibit so many variations that even among the frequently represented types, the degree of uniformity is

sometimes surprisingly low. Some of the frequent and quite uniform types are miniature bowls, hemispherical bowls, carinated bowl with a beaded rim, bowl with vertical sides and a projecting rim, the globular deep bowl or cup, the high oviform vase with a flat base and a projecting rim, miniature jar with a wide neck, the jar with cylindrical neck of medium height and a globular body, the lid with a finial consisting of a rounded, a projecting and a pointed element.

An interesting aspect is that 25 percent of the potteries encountered have no analogues so far discovered anywhere, 30 percent are extremely rare, and only remaining. 45 percent have wider distribution. The elongated cup with pointed bottom in different sizes is another type not found anywhere.

Other objects discovered include terracotta ear ornament, *tali* (Managalsutra), Globular beads, cylindrical polished grey stone pestle, grey quartzite grinding stone.

Alexander Rea had not precisely recorded the place or the position of the trench with in the site, however recorded that the ancient burial site is one of the earliest sites in south India.

The archaeological excavations by Alexander Rea (1904) had proved that the ancient site at Adichanallur. This is the most extensive site that yielded numerous cultural assemblages of that period. Besides skeletal remains, potteries of various kinds, implements and weapons of iron, bronze ornaments, gold diadems were encountered by Rea. Many antiquities had striking similarity with their counterparts discovered in ancient sites like Taxila and Rairh as in the case of metal mirror. The bronze mirrors of ancient sites in India including North West and Adichanallur. They had revealed the indigenous origin from a common place. Many other antiquities like copper flat bars, ram headed handle etc are also have striking similarity between them.

Further Excavations -21st cent.

In the absence of clear cut stratigraphy, Rea's discovery had posed a problem whether such a comprehensive cultural materials were unearthed from the Burial Site or whether they belong to habitational site also. With an objective to obtain a clear cut stratigraphy and date the site scientifically was excavated during 2004-2005 by T.Satyamurthy, then Superintending Archaeologist of Chennai Circle and a team of Archaeologists from Chennai Circle.

The significant discoveries include more than 160 urns within the 600^2 m. The excavation revealed three phases of urn burials in single cultural horizon. The classifications of burials are based on the types of urns and lids as well as the sealing layers and the materials associated with each burial. The site has been used more frequently for burial activities during the Phase-I and subsequently reduced during later phase i.e. Phase II and III. Phase-I Urn burials invariably contain human skeletons in unarticulated manners. In later phases in II and III both primary and secondary burials are found, but the number of primary burial reduces in Phase-II and gradually number of secondary burials increases in Phase-II and predominates in Phase III.

Phase - III (Later Level)

Phase III encountered very few urns and mostly in disturbed condition. All are secondary burial and mostly few fragments of skeletal remains are found. associated potteries and antiquities are very few.

Phase II (Middle Level)

Sixty percent of the urns encountered are black and red ware and red ware contain both primary and secondary skeletal remains. Associated potteries are mostly black and red ware and black burnished ware but shapes differ from earlier period. Good number of iron objects and copper objects including rings and bangles were unearthed.

Phase I (Earbresh Level)

The lowest or the earliest level, urns were buried cutting the bed rock or already available slopes were used. Mostly red ware lids were used to close the urn and they were large in size to the extent that lower portion of the urns were converted into lids. There are few examples of double lids. The skeletons interred the urns in crouched position and antiquities encountered include Couex beads, Iron objects like dagger, sword, and knife.

Percentage of URNS - Phase Wise

In phase-II grave pots are comparably more than phase -III, and they include the shapes like beaker, black and red ware bowl with white dotted paintings. black ware ring stand, red and black and red ware vase with and without white dotted paintings.

Phase- I, grave pots include shapes like, black burnished ware, ring stand, lids with white dot paintings, black and red ware long size and short size and carniated bowls with white dotted paintings. Black and red ware and red ware some time slipped vases with and without white doted paintings nearby rim. Unique black burnished ware vases with white paintings all over the body were also encountered.

Significance of Black and Red Ware Urns

The significant discovery is black and red ware urns observed and reported for first time in the megalithic context. Mostly black and red ware urns were secondary burial. The urns were made out on slow wheel and having fine and thinner fabric. Few fragmentary skeletal remains like teeth were encountered and of secondary in nature. The urn 88 and 119 are child burial and tiny copper ring was found along with the urn 88.The primary observation of the dentition in urn 4 suggests that this could be of adolescent and may be ranging between 15 to 20 years of age.

Important Discoveries

1. Black and Red Ware urns.
2. Two examples of double burial encountered both in phase-II and phase-I.
3. Two examples of having double lid closing a single urn.
4. Decorated pottery representing the early Art.
5. Urn with two hooks inside the urn.
6. Discovery of dotted designs in white paint over the miniature associated wares.

Associated Wares

Potteries of varied kinds and types have been found which throw light on the typo-technological aspect of the Authors of the urn burial culture of Adichchanallur. The classification of potteries reveals that the majority of urns found at various levels are of Red Ware. The red ware which used for making urns or large pots is slow turned and coarse in fabric. Most of the grave goods whether inside the urn or outside the urn are black and red ware in all three phases, and another important pottery type is Black burnished ware followed by

red ware. Another significant discovery is the paintings of dotted patterns of various kinds in white color on Black on Red ware and Black Burnished ware.

There are few examples of linear patterns painted decoration. In general, pottery shapes are Bowls, Vases, High Neck Vases, Lids, Miniature Pots and Ring Stands found commonly in all three phases.

Antiquities include mostly Iron objects like Arrow Heads, Spear Heads, Axe, Celts and Chisels which are badly preserved. Besides these few Copper ornaments also have been found which belongs to Phase II.

A Unique discovery is a pottery, a lid of a urn with appliqué design, depicting a slim and tall female figurine sporting a short skirt running below the knee, standing near a plant which may represent a crop field. Two alligators at her foot step and a deer nearby indicate the location of the visual representation as a marshy land or on the banks. Above this plantain a bird is shown sitting and holding a fish. Besides the female a deer and Alligator is also depicted. This becomes a unique pictorial representation of way of life during the prehistoric Adichchanallur if not a simple depiction of feminist which is commonly described as Mother Goddess.

Adichchanallur 2005 – Habitational Site

If one can compare the materials reported by A. Rea and Satyamurthy it is evident that the composite nature of materials reported by Rea was completely absent in the latter's excavations. A. Rea had projected the Site as yielding both burial materials and numerous metal objects including a bronze mirror, but could not contextually associate them.

The enigmatic problem of assigning the entire cultural assemblages to the burial cultural Zone was not attested here. The material culture representing it as a homogeneous (A.Rea) culture had both the habitational and burial assemblages. In the first season of the second excavation (T.Satyamurthy) it was established that the burial assemblages were completely different, and the scope for search for habitational site became necessary. Hence the second season's excavation cleared the scenario as we could strike at the habitational part of the mount.

The southern slope of the mount indicated, just below the humus itself an alignment of rubble stones arranged to the width of two meters in two tiers or

three tiers cutting the mount into two parts. Initially the alignment had shown some architectural features of a periphery wall, but it could not be established as the mound was much disturbed at the both the ends. However, the structure was found to be laid over a row of rammed earth and irregular rubble packing in section at many places, but also disturbed in major part of it.

The striking discovery of the season is a potter's kiln well inside the habitational area, about 500 mt from the rubble alignment reported above. From the top the layer 1 was compact earth yellowish in colour with few pot sheds. Layer 2 was also compact grayish earth, but the frequency of potsherds increase and most of them were black and red ware. Below this, the earth is completely rammed indicating the mud floor that was laid to scoop the kiln by the potter. The kiln was found sealed by layer 2.

The exposed Kiln is circular in plan with a central circle (3 mt dia) and an outer circle (2mt width) forming a ring all around. The inner circle was found with full of rammed earth of red muram and the outer was found with ashes with carbon some charred wood and with full of potteries. At the centre point of the circle a port hole was excavated indicating the possibility of a chimney erected with the compact earth to allow the smoke and to oxidize the potteries inside in the optimum temperature that could be created. The ash is found mixed with baked earth indicating the package provided by the potter before the firing, outside the outer circle of the kiln the scattered pot shed indicate the massiveness of the Kiln.

Potteries encountered inside the kiln mixed with ash are all black and red wares of megalithic variety. They were mostly miniature pottery, but found with graffiti marks made in pre firing stage.

Kiln II excavated was circular in plan and was found with full of deposits of ash, charcoal and pottery. The potteries encountered include red ware of medium size. The dia of the circular Kiln is 2.6.m and has no special features except the fact that the dried earthen wares were piled in a circular low profile pit with timber and husks to fire the terracotta wares. It was totally different from Kiln I, wherein oxidization was done intentionally in different levels by a closed inner circle fitted with an inner chimney. With the collection of more megalithic black and red ware in Kiln I we can conclude that the present discovery in Adichchanallur is very significant as it had thrown light on the technique of inverted firing applied in Iron Age pottery, different from the technique of other pottery.

Another significant discovery in the habitation sites is bead making smith's house. Adjacent to the Kiln reported earlier towards its north two copper thick plates resembling copper Celts were discovered. The entire trench was found with full of couex Beads. The scattered beads and the micro holes in them indicate that the copper platform was used to drill micro holes inside the beeds which are organic materials.

The material culture excavated during this century had helped us to distinguish between the cultural assemblages of burials and habitation site. It is definitely having two distinquishable features as found in any other metal age site in north western India. Classification of all assemblages of Rea as burial assemblages is not tenable. It is more significant that the habitation site yielded pottery with graffiti marks which were completely absent in Grave pottery.

The metallurgical Study of Excavated objects : Geological mapping of Adichchanallur site had shown that the site was used as a mining centre for a long time and in many places in excavated trenches sheared quartz veins were seen. This feature records the removal of ores with accessory minerals from the site. Numerous iron slogs were also collected from the site and the analysis show most of the ore contain more than 44% iron. However, the significance of the site is that the urns unearthed were kept over the ground levels of excavated mine only. Probably the slope of the mine exposed was used to keep the urns with out making pits but carefully filled with compact earth.

Nevertheless, the real distinguishion of the site is seen in the elemental analysis of the metal samples encountered in the site. Analysis of three samples is tabled below.

Adichchanallur - Elemental analysis of Copper samples

Elements	Sample N0.1	Sample N0.2	Sample N0.3
Fe	0.20	1.46	5.25
Cu	91.47	87.48	87.95
Ni	0.029	0.033	0.046
Au	0.99	0.81	0.90
Sn	-	0.95	-
Pb	-	2.68	-
As	6.47	4.62	3.85

It is evident that arsenic as copper alloy was found in Adichchanallur, which technique was not found repeated in any other site in the South. In some other early historic sites like Kodumanal and Sangamage coins they are found in Sieve and metallic compositions less than 0.1%. In Pallava coins even it is completely absent in trace level. When arsenic is less than one percent it cannot be decided whether it was from copper ores or from ores like lollingite ($FeAs_2$) reported from sites like Nal. More than one percent arsenic was a deliberate addition. Addition of arsenic by one percent increases the hardness of copper from 124 to 177 VHN. In copper arsenic alloys, up to 4% of arsenic forms solid solutions.

Copper alloy at Adichchanallur revealed the use of arsenic as an alloying element whereas it was completely absent in the Chalcolithic culture in other parts of Indian subcontinent. Other early historic sites like Kodumanal yielded tin and lead as an alloying element though their percentage level was low. The addition of arsenic to copper as an alloying element was practiced at Mohenjadaro and it very significant that in the Indian context the use of arsenic as an alloying element was noticed only at Adichchanallur. This technique of use of Arsenic was unique in Mohenjadaro and Adichchanallur.

Analytical study: Alexander Rea's observation that the site has got some rare salient features like holding rare pottery type up to 30 percent had been substantiated by Dr.Corinna Wessels Mevissen. In her study of South Indian Pottery and their comparison with Adichchanallur, it is pointed out that twenty four shapes of Adichchanallur pottery have analogous shapes in many sites in Tamil Nadu. Besides they are found in sites like Chandravalli, Jadigenahalli, Maski, T.Narasipur in Karnataka; Khapa, and Takalghat in Maharastra; Machad and Porkalam in Kerala and Yelleshwaram in Andraprdesh. Analogous types have traveled into Pomparippu in Sri Lanka.

It is clear from the above that many sites in South have got comparable material culture with that of Adichchanallur. There are many common elements that make this site to be the cradle of material culture of South. It has got all fabrics Indus culture, like location over the Banks of the river Tamaraparani, a separate habitational area and a burial of rare types indicating two separate localities, use of high technique in mining and tempering the metals for ornaments, weapons and many material culture objects representing the contemporary social life, use of innovation in producing the crafts objects. High techniques in using lavigated

clay for making pottery and decorating the miniature potteries with white dots of many designs are some other feature carried to other sites in South.

Though this cannot be fully compared with its northwestern Indian Source sites, it should be remembered that compared to Indus sites only one site has been excavated in Tamaraparani belt. While Rea had reported more than 18 sites, archaeological expeditions and investigations in other sites are not yet done.

Nevertheless the OSL dating done by Prof Gartia of Manipur University on two samples are;

Sample Trench 2ZC 16Q2

3670+ or - 570 years 1570 BC.

With the available scientific dating and the material culture as enumerated above, the possibility of Adichchanallur, on the banks of Tamaraparani, might be the nucleus site of south Indian culture as like any other such site on the banks of Indus.

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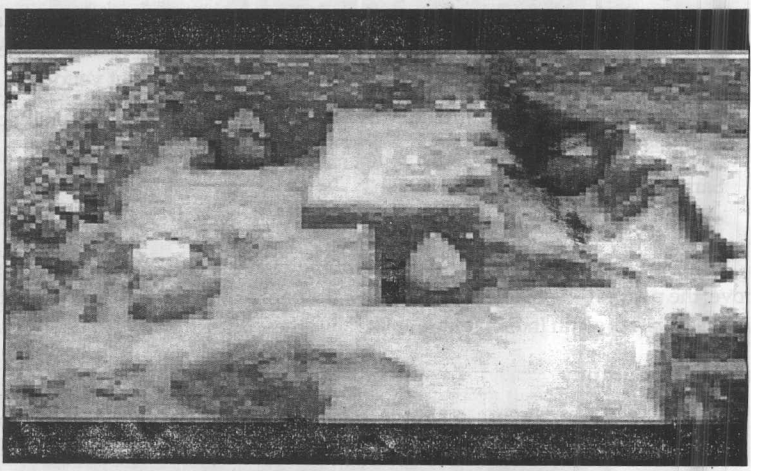
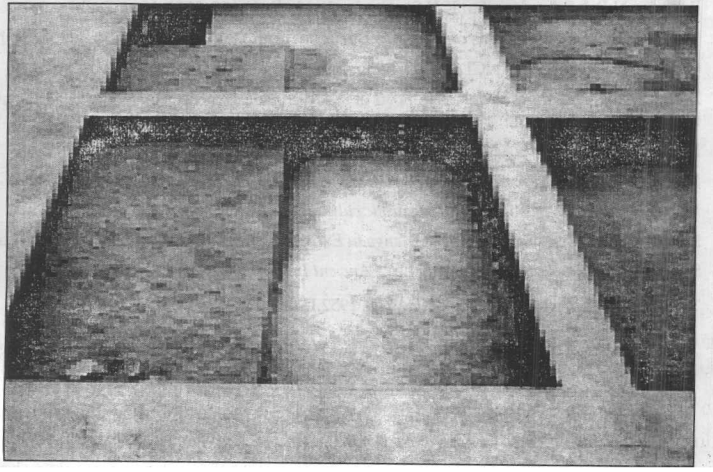
GENERAL VIEWS OF EXCAVATION





HARAPPAN ELEMENTS IN TAMIL CULTURE- AN OVERVIEW

Dr. D. Dayalan

The Pre-historic face of Tamil Nadu is well known through the discovery of hundreds of sites yielding stone tools of various types. The Neolithic people of Tamil Nadu alike their contemporaries not only shifted their way of life from hunting and gathering to food production but also developed contact with contemporary civilizations. The Neolithic people of Tamil Nadu seems to have maintained contact or influenced by the Harappan civilization which spread an area greater than that of the contemporary civilization of Egypt and Mesopotamia put together. This presumption may be corroborated by the resemblance of the graffiti symbols, pottery making techinque and shapes, burial practice, tools and the art objects found in the Neolithic and Megalithic cultures in Tamil Nadu with Harappan materials. Such similarities in these cultures are not mere coincidence but they are the result of infiltration of human thought and imagination from one culture to the other.

Dwelling pit

The Neolithic people (earlier phase) of Paiyampalli[1] Vellore Dist lived in pits of different sizes and depths which were roughly circular and oblong with the longer axis along eastwest or north-south. Sometimes the pits were partitioned by means of stones laid in a row. A few of them were also delimited by stones along the periphery on top. Presence of postholes on the ground level of these dwellings is suggestive of some kind of superstructure and roofing of perishable materials. Inhabitants of the later phase preferred to live in built-up huts, possibly over the pits.[2]

The subterranean dwelling (pits cut into the nature of soil) a practice common in Kashmir Neolithic as reported at Burzahom, Gufkral, Kanispur (Kanishkapura)[3] and other places. The excavation at Burzahom revealed that the

dwelling pits were circular or oval on plan, narrow at the top and wide at the base and also pit chambers, square to rectangular in shape.[4] The pit dwellings are also reported from many of the Early Harappan and Harappan sites.

The excavations at Bhirrana, District Fatehabad,Haryana have brought to light the evidences regarding the gradual evolution of a complex Harappan culture without any break from the period of initial settlers at the site. Such practice in Early Harappan context can also be seen at Mitathal, Haryana.[5]

The first settlers at the site at Kunal, a Harappan site in Hissar District, Haryana inherited the so called pit-dwelling tradition. They dug circular pits about a metre in depth and two metre in diameter. Along the edge of these pits, post holes have been noticed indicating that these shallow pits were supplemented with some kind of a wattle-and-daub superstructure to make them habitable. By sub period 1B the size of the pit-huts increased ranging between 2.64 . meter and 2.92 meter in diameter. The pits were also now lined with mud bricks.[6]

Burial Practice : The burial in the typical Harappan style is that the body laid supine in an extended position. The head was invariably on the north. Along with the body were placed pottery and some food items, probably under the belief that these might be of use to the dead. Sometimes jewellery and other objects were also found along with the dead body.[7]

Interestingly none of the four graves excavated at Surkotada, Gujarat was of the usual extended burial type. On the contrary these yielded only fragments of skeletal remains or even to bones at all. In one case the pit yielded a red ware sherd of an urn and very small charred human bone splinters or remains. Another noteworthy feature of the Surkotada burials is the use of stones for lining the graves. Often these were also covered with capstones and even had a scattering of stone-rubble over them. The use of stones and fragmentary burial type in the aforesaid manner reminds the Megalithic burials of South India.[8]

The origin of the concept of Megalithism is in a way rooted in the Harappan tradition. The provision of orthostats is just a replication of the mudbrick walls encountered in many of the standard Harappan graves. In an area where the stone is available the use of stone slabs for lining the graves is but natural.[9] At Kalibangan the rectangular grave-pit was lined with mud bricks which were given a coating of mud plaster. In some of the cases the pit was circular or ovoid and not rectangular. Moreover there are burials without skeletal remains or only few bones.

The Megalithic stone cairn is also seems to be an extension of the Harappan tradition. During the course of excavations at Harappa, M.Wheeler came across two the evidence of tumulus in circular in plan above the grave.[11] At Yelleswaram District Nalgonda, Andhra Pradesh joint burial was found in the Megalithic context.[12] Interestingly similar type of joint burial was also reported from the Harappan level at Lothal, Gujarat.[13]

The excavation at Dholavira, Gujarat revealed that one of the burials of the Harappan people is similar to that of the Megalithic people.[14] The grave-pit was rectangular measuring 2.75 metre X 1.35 metre and oriented along the cardinal directions. It had no bones, but three pots. The Megalithic element consisted of orthostats and an overlying stone cairn. The other grave also rectangular 2.55 metre X 1.70 metre and oriented northsouth and east-west, had clay coffin in it but without any bones. However, there were pots some of which were placed even below the coffin. The grave was lined with vertical stones and seems to have a capstone overlain by stone rubble.

The sarcophagi are generally a coffin reported from the Megalithic context were of terracotta while a very few are of stone. The digging at Sankavaram in the Cudappah district revealed a terracotta sarcophagus of zoomorphic form in the Megalithic context. The Sarcophagus is with three pairs of legs and the head of a ram comparatively of smaller proportion was fixed in to the socket provided in the lid. Fragmentary human bones were found inside the sarcophagus in addition to one iron lance and some pots which were arranged outside.'[15]

In this context it may be well worth mentioning that on a jar of Cemetery H was painted with peacocks entomb in their bodies the therianthrophic figures in a supine position. The peacocks themselves are within a double band or circles and each bird is separated by star symbols.[16] Some of the scholars observes that the authors of the Cemetery R-37 and Cemetery H considered the peacock as the power of transporting the body of the dead to the land of eternal bliss or to help the dead to cross the mighty gulf of darkness and so on.[17]

The sarcophagus were used by the Megalithic people for keeping the remains of the dead perhaps for same purpose as suggested for the painting on the cemetery jar of Harappan period. The sarcophagi were mainly concentrated in the eastern coastal plain particularly north of river Pennaiyar in Tamil Nadu and south of Godavari in Andhra Pradesh. In Tamil Nadu, the sarcophagus is found

in abundance in the district of Chinglepattu and northern part of South Arcot districts.[18] The available evidence suggests that the sarcophagus had its origin in the eastern coastal plain between Godavari and Pennaiyar and moves slowly westward and merged with the local tradition of the respective area.[19]

The practice of burial system exists right from the human civilization. The Palaeolithic people particularly Middle Palaeolithic followed the tradition of disposing the dead body with certain rituals and procedures. Teshik-Tash in Uzbekistan exhibits an evidence of a burial of Neanderthal man provided with circle of horns of goat around the grave.[20] Bhimbetaka (M.P), the amphitheatre of the pre-historic man also retains the evidence of pre-historic burials. The system of disposal of the dead is developed gradually and reached its climax during the Megalithic time.

Graffiti

The graffiti are found often on ancient pottery in India. Albeit majority of them are in geometric form there are also graffiti resemble to the natural objects and man-made objects. Although it is not certain what they really stand for, some take them as pictographs, others as marks of identification and still others as representation of magic. The graffiti are though found rarely on the Neolithic pottery they are common on the Harappan, Late Harappan, Chalcolithic and Megalithic pottery.

B.B. Lal's statistical analysis reveals that around 85% of the Harappan-Chalcolithic symbols continue down to the Megalithic times.[21] The resemble of the graffiti symbols of the Megalithic and Harappan and Late Harappan cultures is quite interesting and it is difficult to explain the reason for the commonness of ideas of these two cultures as there was a wide chronological different between them. The logical explanation at present is that the Harappan people either whole or part of them might have moved downwards abandoning their home land at the later stage and were responsible for spreading their ideas and techniques to the people in the south. The graffiti similar to that of Harappan and Late Harappan ones are reported on the potsherds and paintings of Megalithic period from many places in Tamil Nadu and Pondicherry i.e. Sanur, Kunnattur, Perumbair (Tozhupedu), Vallam, Adichanallur, Vellalur, Kodumanal, Arikamedu (Pondicherry), Kilvalai, Maharajakadai, Mallachandiram, Kuruvinayanapalli, Oramanagunta and many other places.[22] They show some of the common graffiti symbols.

Script

The Harappan had a monumental script which appears on their seals, sealing, metallic objects, pottery, etc. Notwithstanding there is no unanimous opinion among the scholars about the language of the writing, many experts strongly felt that they are in Dravidian language.[23] However some considered them as a kind of proto-Sanskrit and few others even go to the extent of reading the whole version of Vedic verses in certain seals.[24]

There is yet another argument that is advanced to support the Harappan Dravidian equation. This relates to the occurrence of some Dravidian words in the Vedic language. This may be explained that the Indo-Aryan conquerors perhaps picked up certain words of Dravidian origin in early Sanskrit. The limited Dravidian-to-Sanskrit borrowing can also be explained that the Harappans spoke Sanskrit could have borrowed the Dravidian words from their contemporaries in the south, viz. the Southern Neolithic people, who, logic suggests, are likely to have spoken a Dravidian tongue. [25]

Bead

Etched carnelian beads are found in large number at Lothal. Perhaps the technique of etching might have traveled to other parts from Lothal or Gujarat[26] The carnelian beads of Harappan origin have been found at a number of sites in contemporary Iraq, Iran, Persian Gulf and Central Asia. The discovery of raw material, lots of beads in various stages of manufacture[27] and even a kiln at Lothal shows that the occupant must have been a bead-manufacturer. In fact, this part of Gujarat even today specializes in the manufacture and export of beads. The etched carnelian beads are reported from many Harappan sites viz., Baror, Rajasthan[28] Bhirrana, Haryana[29] and other places. It is interesting to note that the etched carnelian beads are found frequently in the Megalithic context in Tamil Nadu.

The evidence has been brought light regarding the supposed trade between the Neolithic folk of the Deccan and South India on the one hand and the Harappans on the other. At Tekkalakota, a Neolithic settlement in Bellary District of Karnataka and at Sivavaram in Kurnool District of Andhra Pradesh, disc-bead (wafer) and micro-beads of burnt steatite, characteristic of the Harappan civilization have been found. It is therefore suggested that the Harappan obtained steatite either directly from the Neolithic folk of South India or indirectly through some other

agency. Similarly they might have obtained gold from the Hatti mines or the Kolar mines in the neighbourhood of which Neolithic settlement have come to notice. In return of the raw steatite and gold obtained from the Neolithic folk Harappan seem to have given finished beads of burnt steatite and copper tools.[30]

Pottery

Notwithstanding the black-and-red ware forms a distinctive diagnostic trait of the Megalithic culture of Deccan and South India, it occurs in India in different archaeological contexts right from the Neolithic[31] and Harappan periods. Black and-red ware was occurred continuously in the Harappan and Post-Harappan levels at Lothal and Rangpur in small quantities.[34] It is also found in very small quantities in the Harappan context at Rupar[32] Kot Diji and Alamgirpur (U. P.) [34] In stage VI, when the Dholavira was reoccupied, the black and red ware also appeared along with other Harappan pottery.[35] In the Sub-period Ic of Surkotada[36] a white painted Black-and-Red ware had made its appearance. In central India the Black-and -Red ware in use mostly in the Late Harappan times.[37] At Gilund, Rajasthan the white painted Black-and-Red ware has found at the earlier stage i.e. 1500 B.C.[38] Navadatoli, Maheshwar Bahal, Tekwada is also yielded black and-Red ware.The technique of inverted firing was common to all the sites but not the shape or the treatment or the decoration of the vessels surface.[39]

Burnished Grey Ware, a pottery generally associated with Neolithic culture of South India is also reported from Harappan level at Lothal[40] and Late Harappan level at Daimabad.[41]

In the later stage it seems the standard of living of the Harappan was declined due to many factors such as climatic changes, decline of trade, the withering out of the landscape, shifting of river courses and a host of other factors which resulted into degeneration, devolution or transformation of this culture. The town-planning and maintenance of drainage system vanished .Gradually the cities were abandoned and people reverted to rural areas. This shift is fully confirmed by the statistic of settlement in the late and devolved Harappan scenario. Of this time there are no cities but only villages.[42]

When the Dholavira was reoccupied in stage VI the layout of the houses had changed and the size of the settlement diminished although the typical Harappan weights continued, the seals were now bereft of the figures. However, when the

site came under occupation for the last time (Stage VII), the houses became small and circular in size. There was no townplan, not to speak of a drainage system. In spite of all these changes, the similarity of many of the pottery-forms and other artifacts between Stages VI and VII indicates that it was just a case of cultural devolution.[43] The picture found at Lothal and Rangpur indicate the degeneration of the Harappan Civilization from the highly developed urban form to a rural scenario. The decline or devolution of the Harappan culture is observed at many Harappan sites in north-eastern Haryana and western Uttar Pradesh namely at Balu[44] District Jind, Haryana; Mitathal[45] District Bhiwani, Haryana; Bhagwanpura,[48] District Kurukshetra, Haryana; Hulas,[47] District Saharanpur, U.P.; Alamgirpur,[47] Meerut District, U.P. Some of the Harappan sites excavated in the southern domain of this Civilization namely Daimabad[49] Kuntasi[50] Rojdi[51] Desalpur[52] Padri (Dist. Bhavanagar),[53] Rangpur and other places also indicate the degeneration of the Harappan Civilization. At Rojdi the houses inside the fortification wall is not so impressive. These were made of mud on stone foundation. There was no drainage system. No seal and sealing were found but few typical Harappan weights.

On the basis of the above factors it is reasonable to presume that the Harappan people who were familiar both in internal as well as external trade might have maintained trade contact with the contemporary Neolithic people in the south at their prosperous stage. After the degeneration of their culture, a part of Harappan people likely to have moved towards south and amalgamated or had contact with the people of that area and also further south. By this time the urban character of this culture got diluted. The resemblance of some of the features found in the Megalithic culture of Tamil Nadu with the Harappan culture is perhaps due to influence of the degenerated culture of the latter either directly or indirectly.

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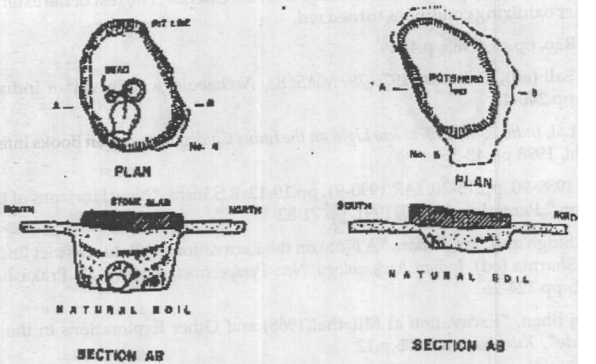
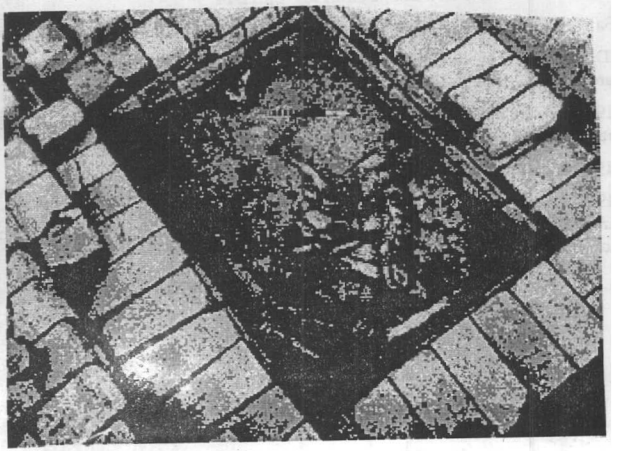
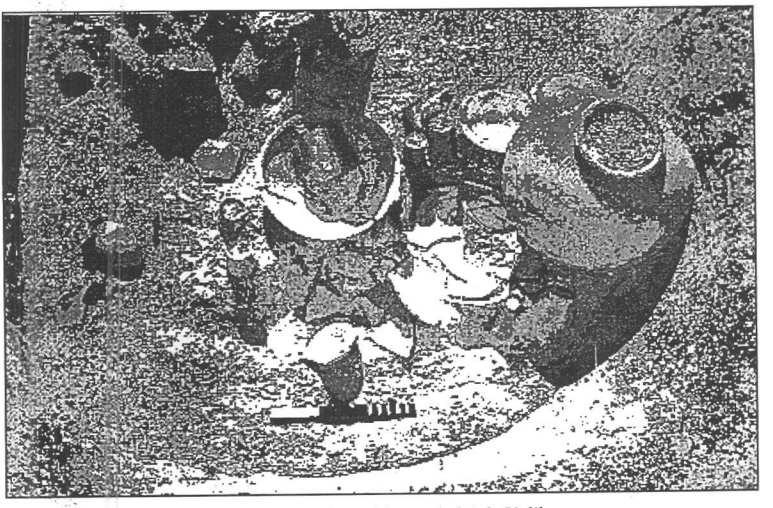
Dayalan



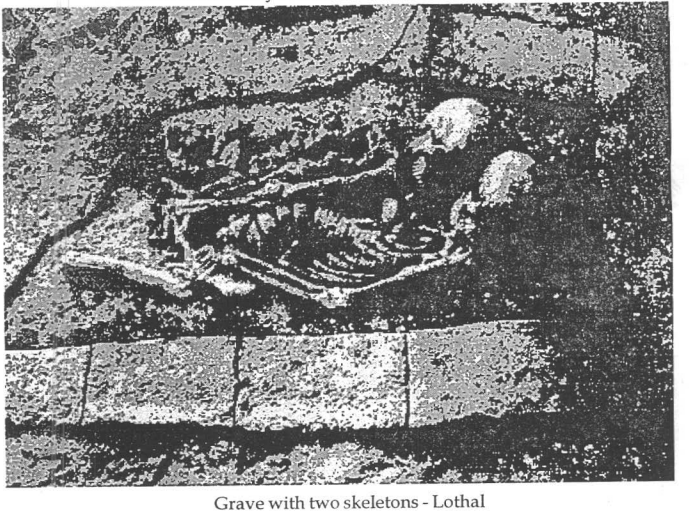
Surkotada - Burials



Brick Lined Sacrificial Pit with Bones - Kalibangan



Burial with Pottery but without skeletal - Kalibangan



Grave with two skeletons - Lothal



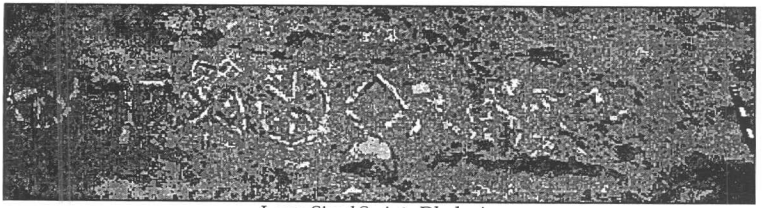
Graffti - Kodumanal



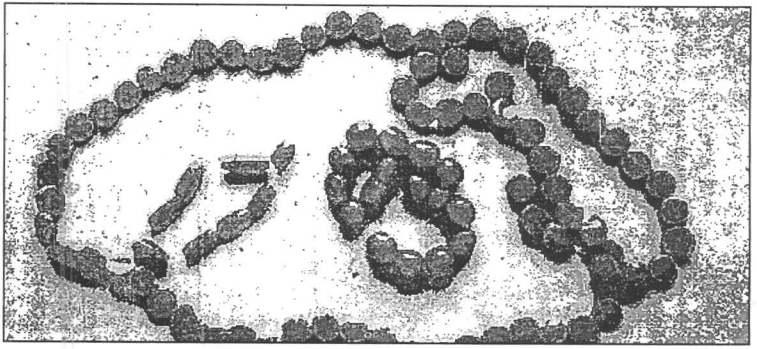
Graffti - Lothal



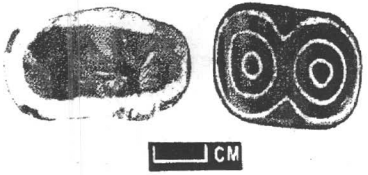
Common Graffti - Harappan & Megalithic



Large Sized Script - Dholavira

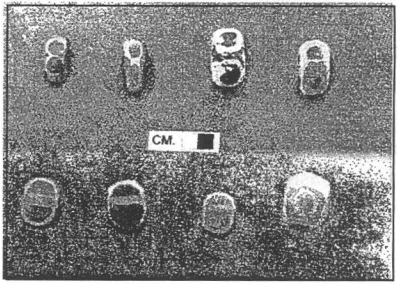


Carnelian Beads - Kodumanal



← Bhirrana

Baror →



SOME CONSIDERATIONS ABOUT INDUS CIVILIZATION & SOUTH INDIAN NEOLITHIC

T. Arun Raj

Introduction:

The Indus civilization is partly contemporary to the Southern Indian Neolithic cultures. 'Though Indus civilization is remarkable for its uniformity, the recent excavations at many Indus sites have revealed a good deal of regional variations. The origin and spread of Indus culture derived a great deal from the antecedent cultures (of Baluchistan) like pre-Harappan & Early Harappan. The Neolithic culture started in the fourth millennium BC in the northwest of the sub-continent, and between it and the Indus civilization a variety of cultures flourished in this area. Interestingly regarding the origin of southern Neolithic it is said to be derived from North-west part of India. Some of the artifact remains also attest to these theories. Since it is believed that Harappans procured raw materials from outside their boundary, the source for Gold was supposed have been derived from (Neolithic levels of) the Hati Mines of Karnataka.

So in the following pages this paper aims to analysis the possible interaction between Indus Civilization & South Indian Neolithic cultures in the light of "said" discovery of Indus signs on Neolithic Celt from Tamil Nadu.

Culture (Unity in Diversity):

The India sub-continent encompasses a vast landmass, comprising different ecological zones where cultural evolution has not been unilineal. For example, if we take a period of c. 2500-2000 BC, on the one side we find the Neolithic cultures in Kashmir and the peninsula, the Chalcolithic rural cultures in Rajasthan and Madhya Pradesh and the other side we have the urbanized Harappan culture in the Indus Valley. It is some thing like in the modem context, though we are living in 21st century with many amenities still tribal people are with us in

some pockets living their own nomadic /pastoral life. The mutual exchanges in the form of give and take policy are going on between the present tribal people and us without changing the basic structures of both the societies. In the same way, it is inferred that Neolithic-Chalcolithic cultures outside the spatial limits of the Harappan distribution Zone must have had linkages with the Harappan though the former occupy a culturally and geographically diverse space from the latter. There is no need to mention that great Harappan cities, which were famous for their extensive trade network, cannot stand alone without the support of rural settlements.

the Origin of Southern Neolithic & prevailing West Asian Theory:

The Neolithic revolution took place around 9000 BC in the Middle East, as revealed by the recent discoveries at Jarmo and Jericho. 'Then it spread to the Iranian plateau and central Asia around 6000 B.C. and to Baluchistan c. 4000 B.C. According to Allchin (1960: 140) the earliest settlements in Baluchistan were by a number of seminomadic communities from central Asia. 'There they were in contact with the eastward extensions of the grey-ware complex, and this contact is reflected in their pottery; they maintained a typical Neolithic/Chalcolithic stone blade industry and if and when, suitable raw material was available made ground stone axes (Narasimmiah: 1980; 76). Then a successive wave of diversified communities came to settle there and then moved towards Indus Valley. Here they underwent a period of adaptation and change. "Perhaps some group became attached to the cities as herdsmen or perhaps as true nomads 'acquired' various cultural traits from them". Further, Allchin is of the opinion that these pastoralists, together with the their cattle, moved eastwards across Sind and Saurashtra and turning southwards gained the forests and grasslands of the Deccan plateau. "Thence they spread southwards until they reached the North Karnataka region, where the open grasslands were so plentiful and the conditions of life so favorable" (Allchin 1960: 141). Thus it is clear that according to Allchin the Neolithic folk came from Baluchistan and Sind to the North Karnataka area, following a land route. He goes one step further and holds them responsible for the introduction of the Dravidian family of language.

While admitting Allchin view, Prof. Sankalia thinks that it is colonization by a people of higher culture who seem to have migrated (in small numbers) to south India from west Asia (1974: 544).

Paddayya (1973: 86) too accepts the hypothesis of Allchin that the Neolithic culture of south India has a west Asiatic origin and that this is perhaps the most coherent explanation advanced so far. He further observes that the absence of definite traces of the culture in the intermediate region, one may accept Allchin hypothesis of a western Asiatic origin as the most coherent explanation sofar for this vexed problem.

According to B. Narasimmiah the theory put forth by Allchin cannot be dismissed totally, as the evidence; archaeological and anthropological, marshalled by him convincingly indicates a movement of pastoralists from Iran and central Asia towards Indus valley (1980: 77).

Fairservis, a renowned American Archaeologist takes this issue in a different hand and says that the Harappan civilization itself is to a considerable extent "cattle dependent", and thus the pastoralism of this southern region may have resulted from a borderland genesis through the pastoral people moving south-east of Sind towards Rajasthan and Gujarat and ultimately drifting southwards the Deccan plateau of the Karnataka region (1975: 329).

Date of Southern Neolithic:

On the basis of the presence or absence of copper, the south Indian Neolithic profile can certainly be divided into two main phases an early phase going back to 3000 BC and a late phase beginning around 2300 BC.

Contacts reflected in Artifacts:

(a) Pottery

In recent years a large number of Neolithic sites have been excavated in the south, which are divisible into two phases. In phase I the pottery was predominantly handmade whereas wheel made pottery occurs along with handmade variety in phase 11. In the southern Neolithic complex, particularly in the Karnataka region, certain similarities with outside region are traceable.

The first phase was predominated by Grey or buff- brown, but a less common ware had a black or red burnished slip, often purple-painted decoration. While buff ware of Neolithic recalling the pre-Harappan buff ware of south Baluchistan, the other note worthy features of this early pottery are the applied

ring feet and hollow pedestals, recalling those of pre-Harappan Amri or Kalibangan.

According to Allchin, the burnished grey ware with post firing ochre paintings recall Burzahom counterparts, as also the pottery from Daimabad in Maharashtra. Again, there is a distant echo of the grey wares from Tepe Hissar, Turag Tepe, Shah Tepe, etc. The red, black painted wares have links with the wares of the village communities of Baluchistan. The polished stone axes are reminiscent of Burzahom counterparts. Like that in the Iranian plateau potting tradition is similar to Karnataka Neolithic times particularly in the grey ware.

In the second phase the presence of perforated jars and spouted vessels once again suggesting contact with regions to the north. The practice of roughening the outer surface in a manner distantly reminiscent of the employed in the Indus and Baluchistan in Early Indus levels, also makes its appearance here.

(b) Gold

One cannot always expect sources for raw material to prepare artifacts with in the urban limit. So it is mainly derived from outside the city boundaries. Harappans also were no exception for this fact. As we know very well that some of the raw material procured by Harappans from outside their orbit like Lapis Lazuli & Silver from Afghanistan, Chert from (Rohri hills of) Sind, Alabaster from Baluchistan & Sind. In this regard, the source for Harappan period Gold objects is interesting to note. Though source of Gold is available in Indus & Jhelum riverbeds, these are basically alluvial form of source, which is not enough to sustain huge demand of gold of the arappan culture. At same time occurrence of huge amount Gold deposits from North Karnataka (Nayanjot Lahiri: 1992; 205) in the form of Ancient Mines which include the famous "Hatti mines" (Near Maski in Raichur district) suggest some of these mines must have existed during the Neolithic level and supplied Gold to many regions of the Indian subcontinent including Indus valley through some intermediary trade routes. Though this observation needs further testing in the form of archaeological investigation, the abundance of Gold mines in Karnataka deserves special attention.

Discussion (or consideration):

In view of these observations the following consideration and issues are felt necessary.

This is definite that Southern Neolithic culture and Harappan culture are contemporary and they existed side by side. As far as similarity in material remains is concerned, they must have maintained indirect influence between them. The one of the reason for this indirect influence may be because of single origin of both of them (i.e. West Asian origin). Though it would, however, be overstating the case if we assumed that the southern Neolithic culture as it is revealed to us today is a wholesale transplantation from North-west, on the contrary the local hunting/fishing groups seem to have made a significant contribution towards its make-up (Paddayya: 1973; 86).

This indirect relation must be possible through the mediator cultures like Kayatha & Malwa cultures of Deccan Chalcolithic. The possible supply of raw material like 'Gold' must have gone through these intermediary cultures viz. Kayatha & Malwa. Interestingly to corroborate this view, some of the pottery shapes like globular jar, deep bowl with a beaded rim & ring base from Kayatha level recall pre-Harappan level of Sothi types. This relation might have also continued in later period of Neolithic - phase 11 (i.e Neo-Chalcolithic phase). Here the communication had existed between southern Neo-Chalcolithic and Late Harappan culture. It is evident that the Late Neolithic culture of the south had some contacts with the Jorwe culture. Spouted dull red vessels, constricted necked jars, ovalish lamps are common between the Jorwe and southern Neolithic cultures (D.P. Agarwal 1984: 111).

So, these above-mentioned points, which are based on the limited extant evidences, is subject to alteration in the light of the new data that might come in future. But as of now the above-mentioned datas suggest that, if the (indirect) contact between Southern Neolithic and Harappan Civilization people is taken into consideration, then there is every possibility of getting various Harappan elements including Harappan script along with Neolithic tools in the southern states of India.

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HARAPPAN TRADITION IN SOUTH INDIA

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Harappan Civilisation of the Indian Sub-continent flourished in different kinds of settlements. Many of them are tiny, covering a very small area, while a few of them are large settlements. In the heyday, they came into contact with South India, particularly with Karnataka for the exploitation of Gold since they did not have any lithic or metal sources, near their vicinity. After the gradual decline of Mature Harappan phase, the Civilisation did not vanished abruptly, but degenerated into a village based Chalcolithic Cultures.

Apart from the Black and Red ware and Carnelian beads (both plain and etched), even the Harappan signs continued in the Chalcolithic Cultures of Central India, Gujarat and Northern Deccan and these signs passed on to the Megalithic Cultures of South India, crossing even the 1000 BC line.

A close study of the Harappan tradition may not only indicate the disappearance of cities, monumental buildings, town planning etc., but also indicates the continuity of the religious beliefs and practices and other things associated with ritual life. Although many scholars have dealt with the Harappan traditions that are closely followed in South India, this paper deals with the recent materials unearthed from both the sides that add some new features to the continuing Harappan tradition in South India.

After the gradual decline subsequent to the mature Harappan phase, the civilization did not vanish abruptly, but disintegrated, degenerated and reversed to the ancient and most dependable and unavoidable occupation i.e., the agriculture and pastoralism that led into the rural based Chalcolithic cultures.

The recent excavations and comparison of the material culture have brought to light some new features to the continuing Harappan tradition.

Pottery

The cheapest and the easily available medium, which was more important was the clay, where a large amount of arts and crafts were modeled out as terracotta and pottery.

Harappan potteries were famous for its well lavigated clay, well fired and wheel turned one. The typical Black and Red ware and other associated wares were more or less identical in both the areas. But the tradition of Black on Red ware, Barbotine ware and Cut ware were no less important.

(a) Black on Red ware was one of the important ware of the Harappans where the paintings on black being the famous loops, intersecting circles, triangles, Pipal leaf, peacocks and fishes. The same tradition of Black on Red ware with Pipal leaf and triangle designs were found on a pot and ring stand from the excavation at Senbaganur (Anglade:1937) and at Tandikudi (K.Rajan:2006) both in Kodaikanal region (plate-1).

(b) Barbotine ware was found in most of the Harappan sites. In South India, although the conventional technique remains the same the knob design took a change and seems to be an indigenous one. These designs were particularly found from the sites like Hallur, Sanganakallu, Piklihal, Tekallakota, Birnur, Utnur etc. and these designs were found only on the jars intended for burials and also fashioned by hands (plate-2). Further Nagaraja Rao suggests that their use in burials represents the nipples of mother and inside may represent the womb. At Maski, it is a large melon bowl decorated with a fillet of raspberries outside the lip (Foote:1916)

(c) Cut ware of Calciform cups, whose antiquity also dates back to Harappa was found in all the pit burials of the Kodaikanal region (Anglade: 1928) and also from the recent excavation at Tandikudi (K.Rajan:2006). The same was also found in cairn burials at Pochampad in Godavari basin of A.P. and also reported from Yeleswaram (P.Ramachandra Murthy: 2000).

It is interesting to note that the potteries found from the burials of Harappan Civilisation were fresh and they are particularly meant for burials and the shapes like Dish on Stand, Ring base, Vessel with elongated body and flaring neck are found only in burials. The same tradition was also followed in the case of Neolithic, Chalcolithic and Megalithic burials of South India, where the potteries recovered from the burials were fresh and intended for those burials where those shapes were not in common use.

Beads

Beads from the time of Harappan Civilisation were found abundantly not only in quantity and shapes but also of varied materials. One of the favourite materials for the beads during that period was steatite that too they excelled in micro beads. The recent excavations in one of the Cist at Tandikudi have revealed nearly 850 steatite micro beads, very much similar to that of Harappan one. It is worthy to note that hundreds of steatite micro beads were found on the head of a man buried in a Cementry at Harappa (plate-3) and may have served as a hair decoration (Dales & Kenoyer: 1991).

A Cist at Tandikudi revealed truncated, biconical tablet bead of quartz which was very much akin to the Harappan terracotta and shell beads found from Baror, Dist. Sri Ganganagar, Rajasthan and Mehrgarh. These beads were found both in graves and parts of ancient villages, which indicated that ordinary people used ornaments in life as well as for decorating the dead. Both the beads and the shape were first time encountered in Tamil Nadu (plate-4). It again clearly indicates that Harappan affinity reached this remote village during the first millennium B.C. itself.

Seal / Sealing

The Seal/Sealing was one of the important aspects of the Harappans, which were depicted with various animals, birds and human beings or with mythical scenes and animals, with or without script or vice versa.

Some interesting seals are

1. Triple headed animal Seal
2. Pasupati Seal
3. Composite animal Seal.

(i) Triple Headed Animal Seal: This type of seal was invariably found at all Harappan sites, where the body being the same but the head looks in different directions - the one looking downwards, the one looking ahead and the one looking backward.

The seal may be representing the past, present and the future. Such depiction can be found on one of the pillars of the Ekambareswara Temple, Kanchipuram, Tamil Nadu, where a deer was depicted in the same posture.

(ii) **Pasupati Seal** : This, the most quoted seal, showing a figure, seated on a legged dais in such a way that the juxtaposed heels touch the part of the body below the genital. On the head, there is a gear consisting of two horns of a buffalo and a bunch of feathers. Surrounding the figure there are, beginning from the right and in anti clockwise direction, a buffalo, a rhinoceros, a man and a tiger. Below the dais, there appear to be two deer, one of which is damaged. By most writers, beginning with Marshall (1931: vol-I), the figure has been taken to represent a proto-Siva in his lord-of -beasts (Pasupati) aspect.

Our interest is not on the whole series of things depicted, but the seated central figure, that too the sitting posture. This type of Asana, the yogic posture can be seen in the sitting posture of the Non-Aryan tribal God, Lord Aiyappa, who sits in the same posture, which again shows that the tradition of religious practices and beliefs were still continuing.

(iii) **Composite Animal Seal**: Some seals show composite animals - the body of a tiger, the horns and face of a bull, the trunk of an elephant have had

some mythological significance. The same type or other combination of the composite animal figure can be found in the balustrade of most of the South Indian temples.

Fish Motif

The excavation at Kalibangan, Dist.Hanumamgarh, Rajasthan reveals a terracotta water pipe with the fish sign upon it (Asko Parpola: 1986). The similar tradition of pointing the water bodies can be seen at South Indian temples, where a fish or a tortoise was sculptured in bas-relief, to represent the direction or indicates a drain near or below it.

Brick-Size

The uniformity of the Harappan culture lies in each and every aspect including the brick-sizes, which can be seen in every site and throughout their period. The ratio of the bricks were1:2:4 in the early phase and 1:2:3 in the later phase. The same ratio of the brick was even followed and used at the port town Kaveripattinam and also at other historic sites in south India.

Inlay

The inlay work of the Harappans was very famous as the inlays of various shapes of materials like steatite, shell, terracotta, metals etc. were found during the excavation. It is interesting to note that the site Sanouli, dist, Bhagpat, U.P. have yielded a pot embedded with steatite beads. The tradition of embedding was found at Kodumanal, a megalithic habitation cum burial site which have yielded a bronze tiger inlaid with alternating triangular pieces of carnelian and lapis-lazuli collected from a transept-cist (plate-5).

Discussion

As the Harappan sites did not have any lithic or metal sources in their immediate vicinity, they have showed very much skill in the exploitation of mineral resources, whatever the distance involved. Thus gold, in all probability was obtained from south India, more particularity from Karnataka. Associated with the old shafts of the champion reefs in the Kolar and Hatti mines area have been found specimens of the burnished grey ware of the type known from the Neolithic culture which was near contemporary of the Harappan. Apart from this, steatite disc beads, micro beads were also found in Neo-chalcolithic sites like Singanapalli, Tekkallakota indicating their Harappan contacts.

The clustering of Neolithic sites around the gold mining areas and the recovery of gold ornaments from limited excavation at the neo-chalcolithic sites like Tekkalakota and Chalcolithic site of Daimabad confirm that the exploitation of these gold mines continued after the Harappan period.

There is further evidence from the 3 radio carbon dates of southern Neolithic site like Utnur between 2860 B.C. and 2366 B.C., which clearly shows that the beginning of this culture is earlier than that of mature Harappan civilization. In later phases, the southern Neolithic was contemporary with and may have survived, as known by 4 radio carbon dates from Tekkalakota, the earliest being 2023 B.C. and the later being 1692 B.C. respectively (Possehl 1990: 56-60)

Walter A. Fairservis Jr. in his work on decipherment of the Indus scripts, has also taken into consideration the graffiti on the pottery of chalcolithic cultures of central India, Maharashtra and Karnataka and opines that the proto Dravidian culture of the Indus valley had gradually filtered through the heart of India and ultimately became the dominant culture of the south, while the north, the original home of the proto-Dravidian became Aryan (Shankalia, 1978: 33).

As already mentioned, even the Harappan signs continued in the chalcolithic cultures, which are broadly ascribable to the second millennium B.C. The late Harappan signs inscribed in Chalolithic pottery on the Iron Age (10th -8th B.C.) were brought to light by Narasimaiah, in the Kurnool excavation (unpublished) in Ramapuram district. These signs passed on to the megalithic culture of south India, crossing even the 1000 B.C. line. In fact, on a black and red ware pot from Sanur, assignable to the first half of the first millennium B.C. as many as three Indus signs occur in a row, signifying that these were not just hang over symbols but constituted as valid an inscription as did the Harappan proper (Lal . B.B.: 1960).

At last, the great numbers of towns are invariably known as Kot, Kotada, Quetta, etc. These names mean fort and in fact many Harappan towns are fortified settlements. This is of particular importance, as these words seem to be the precursors of the term Kottai in Tamil, which also means fort.

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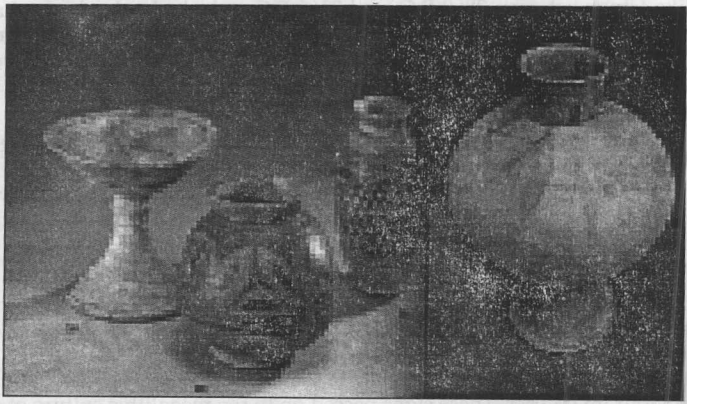

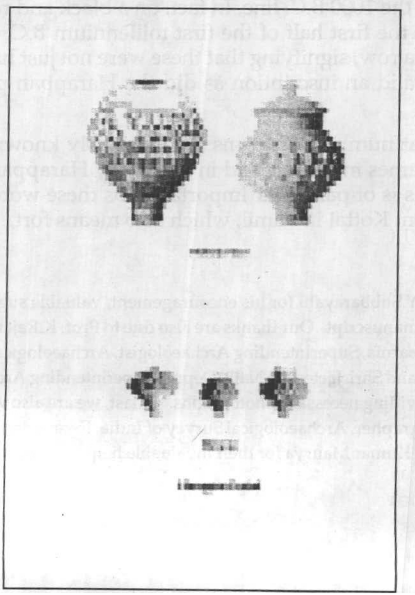

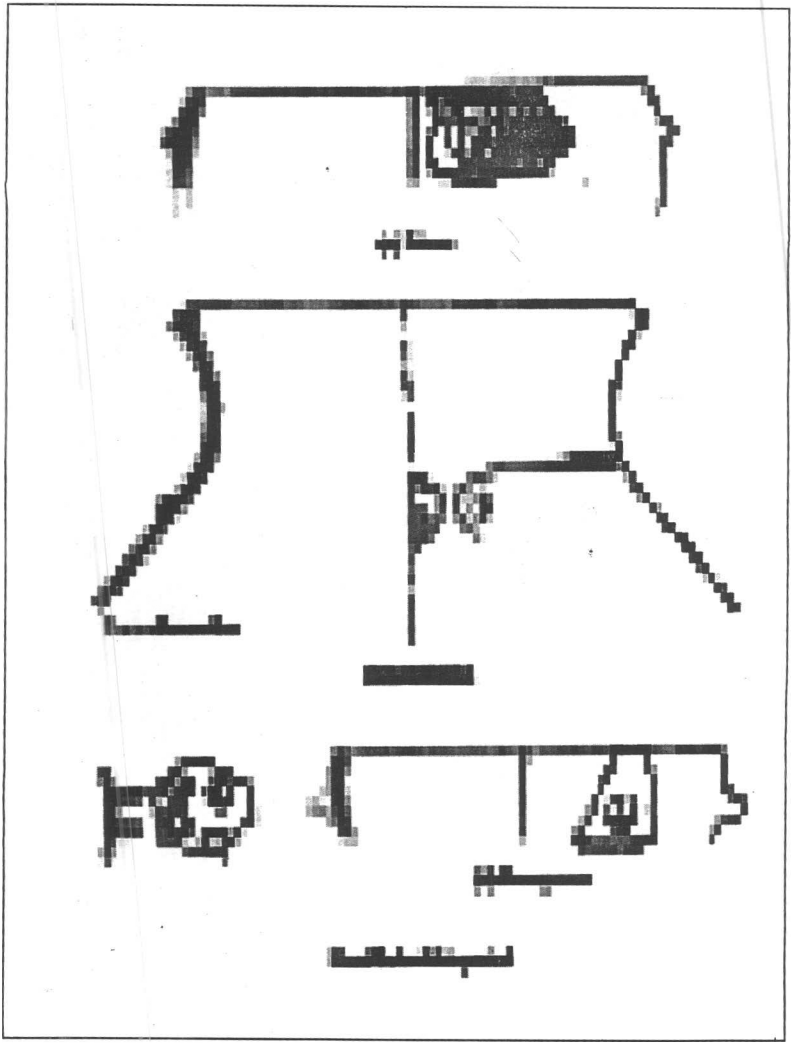



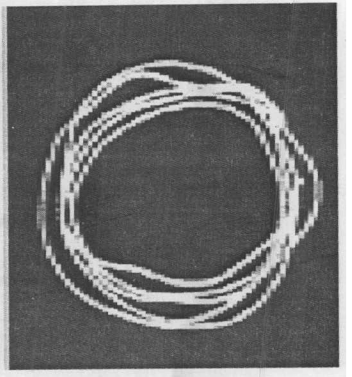

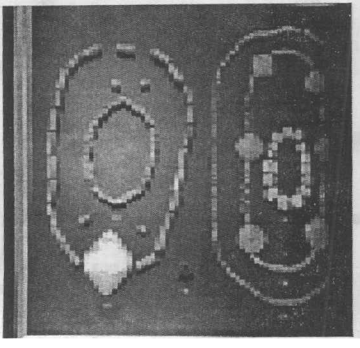

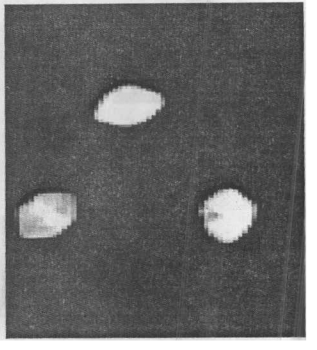

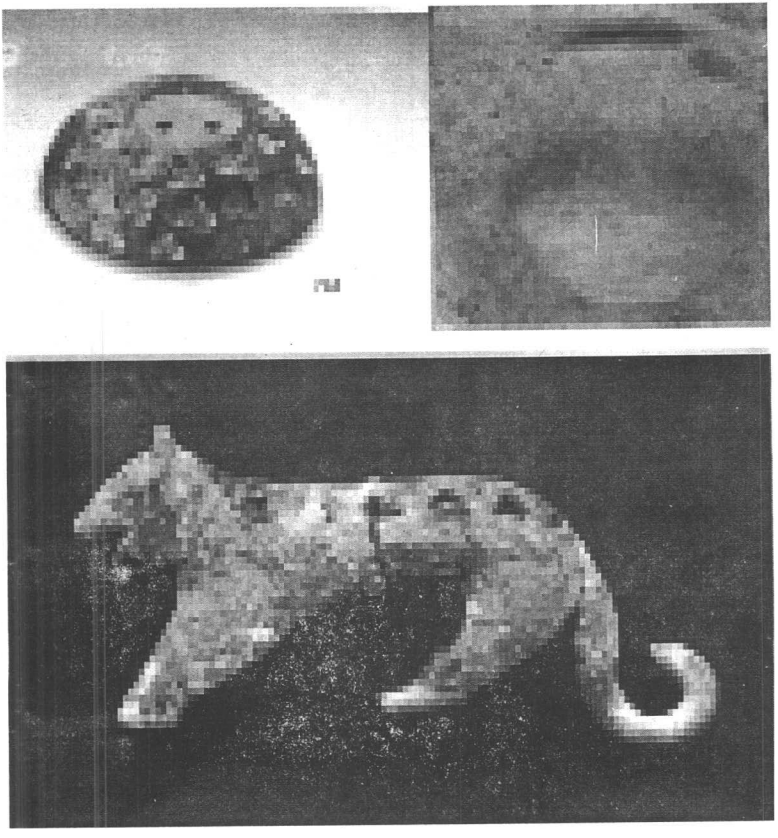

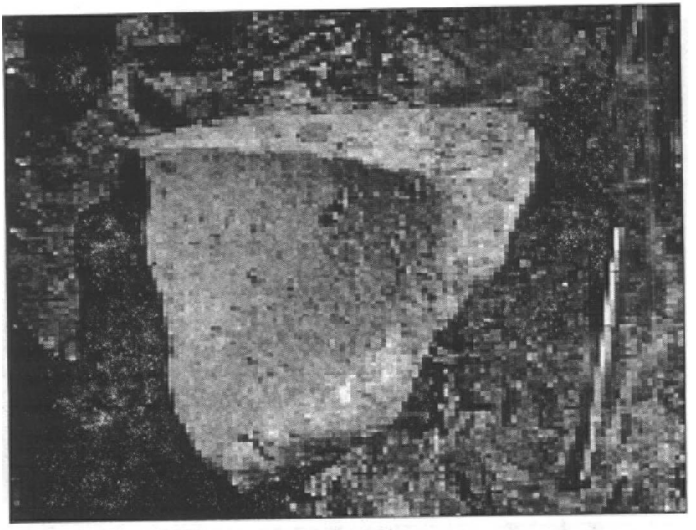

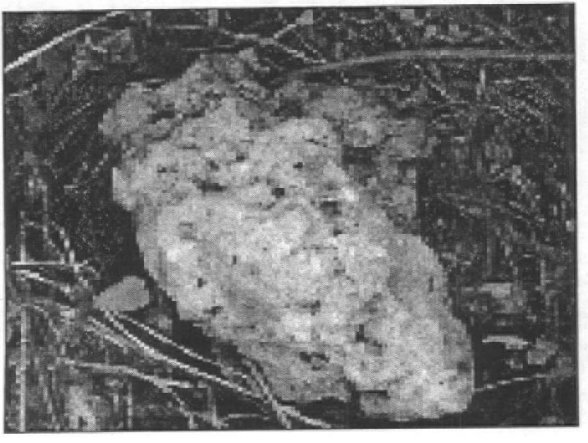

pation by the villagers of Rakhikhas and Rakhishahpur. During the last three field seasons, the objectives were primarily to realize the sequence of cultures and locate the developmental stages in early and mature Harappan horizons in a stratified context and their relationship with other excavated sites situated in Drishadvati - Saraswati valley, besides locating cemetery area.

In order to realize the objectives, horizontal excavations were carried out at RGR-1, RGR-2, and RGR-4, however, the excavation on the periphery of RGR-5 was limited to one trench to examine the nature of deposit. The cuttings of RGR-1 revealed Early Harappan occupation followed by mature Harappan, while at RGR-2, the early occupation was confined to northern half of the mound but during the Mature Harappan period, the occupation got extended towards the southern part, thereby covering the entire area of the mound. The excavation at RGR-6 witnessed only Early Harappan occupation and therefore, planned horizontally with a view to understand the developmental stages in occupation. The excavation at RGR-7 was of vital importance as it revealed burials of Mature Harappan period, similar to the one reported at Kalibangan.

Period-1: (Early Harappan)

Excavations conducted down to 7 m depth in trench M-12 at RGR-6 shows gradual development of Early Harappan culture from an incipient state to urban formation. Natural soil could not be reached due to regular occurrence of structures at different levels. Six such structural phases were identified. On the basis of these occupations Early Harappan period may be divided into two sub-periods viz., Period-l(a) pre-formative urbanism and Period-l(b) formative urbanism.

Period-I (a): Pre-formative Urbanism

Three structural phases have been exposed in a limited area at RGR-6. Phase-I is represented by a thick mass mud platform-like structure, noticed in the north-western section of trench M 12/2. It was sealed by layer (15). Further details of this platform could not be ascertained due to space constraints. Phase2 revealed a circular structure (dia-2m) with an entrance (90 cm wide) towards south, made of wedge-shaped mud bricks. Contemporary to the circular structure was noticed, a rectangular structure (2.20m x 1.60m) made of mud bricks (33 x 24 x 9 cm). Both the structures had mud floors and were sealed by layer (10). In phase-3, a series of rectangular house plan was exposed immediately below running across the street of Period-I (b). These structures were sealed by layer (7).

Remains of sub Period-I (a) were also noticed in the cuttings of K3 at RGRI. in the form of a circular structure (dia 1.90 m) with an entrance (90 cm) towards east. Here, the structure is outlined by four courses of dwarf mud brick wall with

post-holes at intervals, suggesting use of wattle and daub enclosure supporting a conical thatched superstructure. The inner floor was of mud, while the courtyard was paved with burnt brick-bats. In the same trench, another rectangular structure (2 m x 0.80m) was also noticed in the form of mud wall. Eastern part of this structure was also exposed. Its inner section had a full pot in upside down tilted position, besides scattered potsherds and bits of charcoal mixed with ashes.

Period-1: Formative Urbanism

Period-I(b) is characterized by planned settlement and emergence of other cultural traits namely uninscribed seals, terracotta bull figurines, chert blades, weights, etc. The cuttings at RGR-1 and RGR-6 have revealed these evidences.

At RGR-6, in trench M12, houses were built on either side of 1.92 m wide east-west street. The cuttings of street exposed three successive structural phases, overlying one above the other. In phase-I(b) (i), a rectangular structure (3 m x 2.45) built of sun dried bricks of 3:2:1 ratio was noticed, sealed by layer (6). Inside the structure, two oblong pits were noticed showing fire activity, filled with ash and bits of charcoal. In the next phase-I (b) (ii), a house consisting of two rectangular rooms (4.35m x 1.78m; 4.35 x 2.62 m) with a courtyard was planned on the southern side of the above mentioned street intersected by a north-south lane. On the other side of the lane, a similar layout of the house could be traced partially. A circular Brick-lined hearth (dia. - 1m) was noticed in one of the cells (2.20 x 2.40 m). Similar hearth was also exposed within a cell located on the northern side of the street. This type of hearth, locally known as "hara' is still being in vogue for boiling milk. In the last structural phase-I (b) (iii), a squarish room (3.20 x 3.20 m) with an entrance (1m wide) towards south was exposed.

The early Harappan ceramic industry includes all the six Kalibangan fabrics, besides a few examples of hand made pottery. Apart from these, some sherds reminiscent of Hakra ware, were also reported which includes (i) incised (ii) applique (iii) dendrite and (iv) ribbed or striated varieties. The incised ware characterized by thick and thin medium vases was decorated externally with groups of multiple incised lines drawn horizontally, diagonally and in wavy compositions. Applique ware is basically red, characterized by thick applique zig-zag bands occurring over big jars having pronounced out-curved rim. The dendritic ware is of medium fabric and the shape met with was vases of medium size. It was first painted from neck to shoulder and subsequently treated with secondary coating of mud mixed with coarse particles. The paste is generally seen overlapping the chocolate slip applied over the out-turned rim, neck and shoulder portions of a pot. The ribbed ware was both in thick and thin fabrics; the shape however, could not be determined. Among the typical grey ware shapes of Rakhigarhi mention

may be made of legged basin, dish and dish-onstand, while a considerable number of bowls found in bichrome ware also deserve mention. Other noteworthy shapes in red ware are vase, *lota,* storage jar, *handi,* dish-on-stand, bowl, trough, etc. Paintings were often executed in black over red slipped surface. Important painted motifs are simple horizontal bands generally found around the neck of the pot and triangles in a row, and other restricted varieties include sun, *peepal* leaf, floral and geometric motifs, besides typical horn motif. Large numbers of animal bones found during the excavation throw important light on animal husbandry pattern of the Early Harappan people.

Important antiquities reported are graffiti on potsherds, stone sling balls, hopscotch, terracotta animal figurines, segmented bangles, rattles, wheel and toy-cart frame, bone point, stone bead polisher, quern and muller. The occurrence of shell bead, steatite beads, chert blade, copper objects, terracotta seal testify exploitation of raw material and trade networks established during the period along the major river and land routes. The emergence of planned settlement gave rise to organized living, which inter alia suggests the beginning of some kind of local self-governance.

Period - II: Mature Harappan

Period II was evidenced in the cuttings of RGR-I, RGR-2 and RGR-4. The evidence of the preceding period showed the beginning of Mature Harappan traits. The excavation also confirmed earlier findings. RGR-2, presumably served as the citadel. Here, the cuttings on the western slope exposed mud brick fortification wall, together with an entrance on south-western side. Within the citadel mud brick podiums like those at Kalibangan were found. Here, the podium had in-built oblong pit chambers, possibly for ritualistic purpose. These chambers had deposits of charcoal bits and fresh looking cattle bones. Besides these in-built chambers, a series of four or five fire altars was noticed in north-south alignment on top of the podium; these were brick-lined with mud plaster and were found in a dilapidated condition. Each of these had a vertical brick fixed in the centre, symbolizing stump-like *yashthi.* The result of such a disposition of the row of the altars indicates that the users of the altars had to sit on their western side facing the east. The podium was aligned east-west and had covered verandah embellished with flight of steps, suggesting entrance from western side. A brick well was also noticed at the north-western corner. The podium had a street on all the four sides suggesting its importance in terms of public utility.

In addition to the fire altars in a row noticed over the podium in RGR-2, there are a few more fire altars of distinct shapes, never reported before from the

Mature Harappan levels. The courtyard in trench K-5 of RGR-1 brought to light three different types of fire altars, oriented north-south. The one in the centre was unique on plan. It has semicircular central projection on north-south side, reminding *chiti - like* configuration. In the central portion was a stump of brick over a mud plastered base. Around it., the deposit was of ash and charcoal. Towards its right flank, a small heart-shaped fire altar was noticed with a stumplike projection in the centre. Further to its right was noticed an oblong fire altar, which was reminiscent of Kalibangan evidence. It has two coursed enclosure wall of brick-on-edge with signs of plaster. A portion of the western arm of the fire altar was found fallen in the middle portion, suggesting the practice of destroying the altar after performing the rituals. Within, the altar a good number of offerings in the form of terracotta cakes of triangular lenticular shapes and *mushtikas* were noticed. Another unique fire altar was of *yonipitha* type with a stump-like projection in the centre in H-5. Thus the fire rituals formed a part of the religious life of the Harappans of Rakhigarhi, both at civic and domestic level.

Apart from this, the citadel also enclosed structures of different phases. An unpaved public drain of burnt brick was noticed in trench M-19, running in north-south direction, a drain terminating from western side had a cesspool at the terminal point. From the upper level there were evidences of individual house-hold drains, some discharging into the street, while a few in the soakage jars in middle of the street. A potter's pit kiln in RGR-1, trench No. N-5 is a unique discovery. It is somewhat conch shape on plan, oriented east-west. In the middle, there are two semi arch-like brick built shafts for supporting medium to miniature-sized pots and pans; those were arranged in the kiln alternately with layers of cow dung cakes. The potter used the eastern projection of the pit for arranging the pots and pans in the kiln-while it was fired from the western side. The vitrified plaster surface of the kiln is an indication of constant use of the kiln and the high temperature.

The pottery deserves special mention. Besides, the typical Harappan ware, plain as well as painted, there also occurred pots which had an un-slipped dull red fabric painted over in black pigment with broad bands along the neck and shoulder. 'Reserve" slip was also encountered. The shapes include goblets, dishes, basins, flasks, narrow-necked vases, storage jars, perforated vessels, dish on-stand and lids. The plain red was usually with or without a fine red slip. The painted motifs consisted of both geometrical and naturalistic elements.

Among the important antiquities mention may be made of terracotta animal figurines. The terracotta bulls with prominent humps, elongated body and block or joined legs were found in good number. The terracotta, *igurines of water buf-*

falo could be distinguished with the help of grooved horns. Other animals represented were dog, lion, leopard, rabbit and horse. As compared to animals, human figurines are meager in number. Other finds included chert blades, weights, copper objects, terracotta objects, gamesmen, beads, etc. Besides steatite seals (Pl.5) and circular terracotta sealings bearing majestic elephant moving to right, clay tablets deserve special mention. An inscribed lead ingot of plano-convex shape was an important discovery. A copper vessel containing silver bangles and a gold headband deserves special mention.

The mature Harappan cemetery area (RGR-7) was located about 200 m. north of RGR-1, RGR-2 and RGR-3. One trench of 10 m x 10 m could reveal remains of eleven burials. All the burials were of primary inhumation type extended burial. Some of the burials are disturbed due to later pit activities for burials. The later pit activities suggest three stages of burials during the Mature Harappan period. The burials of upper level have also been disturbed due to constant ploughing activity. The dead were buried in an oblong pit with head kept towards north slightly tilted towards east with a few exceptions of tilt towards west also. In majority of cases, grave goods generally consisting of pots and pans and were kept behind the head of the dead. Two female skeletons were seen with shell bangles in their left hands, indicating their married status at the time of their death. A miniature gold armlet was also found near a skeleton of a female. Three phases of burials could be identified. The earliest burial is burial no. 11

The results of the excavation confirmed a continuous occupation of the site from pre-formative urbanism to the highly developed mature phase of the Harappans at Rakhigarhi. It requires further confirmation in terms of structural phases evidenced at RGR-1, RGR-2 and RGR-6.

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DRAVIDIAN ARCHITECTURAL ELEMENT IN THE INDUS VALLEY CIVILIZATION

C. Govindaraj

Indus valley civilization flourished in the northwestern part of India about five thousand years ago. Researches are being continued on various aspects of this Civilization. One of the important questions among these scholars is about the authorship of this civilization.

Many scholars have worked on the Indus seals and have expressed divergent views. Some scholars presume that the language used in these writings is Sanskrit and the other think that it could be Proto-Dravidian. None of these views is proved beyond controversies.

Apart from the writings of seals other findings like Linga, Yoni stones, and Pasupathi depiction in the seals are said to be the characters of Proto- Dravidian culture. Likewise some excavators feel that there were fire altars in the cities and say that this aspect is of Aryans.

Recently a large city of Indus culture, Dholavira was found in the Kutch district of Gujarat. The site was excavated by R.S. Bisht. The city has three parts and they have been named Acropolis, Middle town and Lower town by the excavator.

The impressive Acropolis has two sub divisions, namely Castle and Bailey. Castle is believed to be the residence of the king. It has a rampart with a width of 18 ft at the bottom and II ft at the top. The rampart has been veneered at the outer side with chiseled granite blocks and the inner side built with mud bricks. The absence of burnt brick in the entire city is an unique feature of this site. The southern arm of this rampart has witnessed a severe collapse perhaps due to an earthquake doubled with heavy rain. And this damage had been immediately rectified.

The rampart has two gateways, one at the middle of eastern arm and the other at the middle of northern arm. The northern gate is much imposing. A largest size of writing ever found with nine letters, each measuring about 15 inches

is found in this gate. The excavator says that it should be the name board of the king. These letters are made of conch pieces embedded in a wooden plaque, while the wood perished into dust the conch pieces are found in tact.

The more astonishing feature of this northern gate is its shape. It is with the shape of large rectangular block pierced by a thoroughfare at the center, and this shape recalls the ground plan of our *Gopurams*. While entering into the *Gopuram* one can see two elevated rooms on either side, meant to place the musical instruments like drums of the temple. In cases, these rooms are made with two tiers with the help of columns. The same arrangement is found in the northern gate of Dholavira. R. S. Bisht has also conjectured from the ruins that, the gate house is with two storeys. Though it was not like our present day skyscraper *Gopurams*. It is sufficient for us, that, it was a storeyed gateway built in the center of a rampart.

Though the incipient shape of *Gopurams* appear for the first time in the temples of Pallavas, the panel depictions in the *thoranas* of Sanchi and Barhut Stupas. Literatures like Arthasasthra reveal the existence of tall *Gopurams* built at the centers of ramparts of towns and palaces. The descriptions of gateways tall enough to enter an elephant with flagstaff are found in the Sangam literatures. More evidence for the continuations of such gateways through proto historic and early historic times are coming up from some of the recently excavated sites in North India.

Being *Gopuram* is an important feature of Dravidian temple Architecture, it is very rare in the north Indian temples. The theory of Dravidians once found spread throughout India could be recalled to explain the occurrences of early evidence of gateways in North India. Later when they settled down in the south they continued their traditional architectural features.

So, the northern gateway of Dholavira and the South Indian *Gopuram* are of same plan, and the latter is the characteristic feature of Dravidian temple Architecture. This Dravidian architectural element found in the Indus city, Dholavira, could support the theory of Dravidian authorship of Indus valley civilization.

PROBABLE DENTIFICATION OF THE SYMBOLS FOUND IN TAMIL BRAHMI INSCRIPTIONS

- Dr. M.Bavani

Symbol is perhaps, the short and effective way of representing an idea by means of some marks, signs and objects other than conventional scripts. To expose an idea, say, 'the sun' by drawing a picture is called pictograph; driving at the same concept by developing some ideas like light & heat is defined as ideograph.

The pictograph of Indus valley civilization has not been yet deciphered properly. During the period of 1200 years in between the decline of Indus scripts and the rise of Tamil Brahmi scripts good reasons are there to believe that these symbols had been in wide use of the people of then period. Even after the birth of Brahmi scripts, these symbols had found their long way in the long run of history.

Of all the states of India, only in Tamil Nadu, these symbols are found in larger scale. Most of these symbols have occured on potteries, coins, rings, seals and inscriptions. Of all these, two symbols found along with early Tamil Brahmi inscriptions taken up for deep study in this paper:

So far 94 early Tamil inscriptions (Tamil Brahmi) have been identified in Tamil Nadu[1]. Of them, 11 inscriptions identified in 3 different places have the symbols inscribed at the end of them. Two inscriptions found at Kongarpuliyangulam have two symbols. The other sites have only one symbol. Depicted as a circle attached with two right side pending hooks up and down. That is the first symbol. It looks like a bracelet. The same symbol is likely to be seen in Indus scripts and on some potteries discovered in Tamil Nadu.

A square segregated further by four internal small squares is another symbol. This symbol is called as field symbol by the scholars [2]. This type of symbols has occurred in punch marked coins of India and Ceylon with minor variations, not in the inscriptions. A tree or plant like symbol depicted on the square symbol discribed as a railing tree by P.L.Gupta[3].

The views, interpretations and literary evidences about these symbols and my hypotheses are given below :

Symbols in Literature

கோண்மாக்குயின்ற சேண் விளங்கு தொடுபொறி (புறம்: 58)

"pori" mentioned in Sangam Literature is a parallel term for symbol, emblem, and mark. Tholkappiyam ascribes army, flag, umbrella, drum, (horse, elephant, chariot, garland, crown) and the scepter to a king. These are the symbolic representations of a king.

"படையுங் கொடியுங் குடையு முரசும்
தெரிவுகொள் செங்கோல் அரசர்க்குரிய" (தொல்.பொருள்.மரபு.இலம்.72)

Clan rulers of the Sangam period the Cera, Cozha and Pandya have bow and arrow, tiger and fish as their clan emblems.

The Akanaanuru mentioned the bow emblem of the Cera as "வணங்குவிற்பொறித்து" (அகம் 127:5) Pattinnappaalai quotes that the tiger seal of the cola king was impressed on the exported items in the harbour of Kaveripoompattinam as

"அளந்து அறியாப் பல பண்டம்
பொறிமூடைப் போர் ஏறி" (பட்டினப்பாலை 131:1331-137)

This fact is confirmed by further evidence of the tiger seal of the Cozha of Sangam period found at Kaveri Poompattinam[4].

The 'Kuzhuvukkuri' mentioned in Tholkaappiyam is a secret code of words adopted by a sect of people in course of their verbal transactions with others but not in written format.

Conception of Experts:

Study on symbols was started by Brain fil in 1881. Subsequently, following Brainfil, Yasdani, E.H. Hunt, B.P. Lal, K.Rajan and S. Gurumoorthy have studied deeply the graffiti marks and have given their hypothesis. In 1977 Iravatham Mahadevan studied the Indus scripts and published the computerized catalogues. He published a very big volume on Tamil Brahmi inscriptions in 2003. He also dealt with symbols. In 1982 K.P. Rao studied the Indus scripts and added phonetic value to the symbols.

Iravatham mahadevan quotes that the first symbol found in Indus scripts is a crab, and the additional marks identified are the claws of a crab. But he does not put any command on this symbol[5]. K. Rajan suggests that the symbols found in these inscriptions are also can be noticed in the potteries of Kodumanal and Alagankulam. In such context these symbols assume greater significance.

S. Rajagopal reads the Kongarpuliyankulam inscription as "Paakannuur Peetaatan Pitan iitta veepon (பாகன் ஊர் பேதாதன் பிடன் ஈத்த வேபொன்) and interprets that Peetaatan pitan gave the gold. He defines "வெபொன்" as melted or heated gold. The term "வெ" stands for melting and heating[6]. Quite contrary to this Panneerselvam reads this inscription as "வே போன்" and gives the obvious meaning of "வேய்ந்தோன்" as one who thatched roof[7]. Prof Panneerselvam's reading seems more reasonable and acceptable. However nobody has connected this symbols with the traders.

Now we come to the inscriptions. Among the I I inscriptions 5 have the term 'vaNikan' வணிகன், that is trader. All the experts, without any controversy agree that the terms occurred in these inscriptions is 'vaNikan". So, we could infer that these symbols might have been possibly used by the traders or the trade guilds.

In continuation of the Sangam period the trade guilds belong to medieval period also had their separate symbols that could be seen depicted in the medieval inscriptions[8]. As such, we could further infer that these symbols stand as an ideograph. The position of these symbols does not change whether they are occurred on potteries or in inscriptions.

Whether the term trader (vaNikanh) appear or not, we can take that these inscriptions refer to the trader or the trade guilds according to the symbols. The first symbol stands for traders and the second one stands for supremacy or headship, as quoted by S.R. Rao[9]

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சிந்துவெளி உருக்களுக்கும் தமிழ்மொழிக்கும் உள்ள தொடர்பு

சு. சீனிவாசன்

முன்னுரை

சிந்துவெளி அல்லது ஹரப்பா என்று அழைக்கப்படும் நாகரிகம் இன்றைய பாகிஸ்தான் மற்றும் இந்தியாவைச் சூழ்ந்திருந்த பகுதிகளில் கி.மு.2500 முதல் கி.மு.1900 வரை தழைத்திருந்ததாக அறியப்படுகிறது. தென்ஆசியாவின் பண்டைய வரலாற்றுக் குறிப்புகளைத் தொகுக்கும் முன்னரே இந்த நாகரிகம் அழிந்துபட்டதாகத் தெரிகிறது. இதற்குரிய காரணம் அறியப்படவில்லை. இயற்கையில் நிகழ்ந்த நிலநடுக்கத்தாலோ வெள்ளப்பெருக்காலோ காட்டுத்தீயாலோ இந்த நாகரிகம் அழிவுக்கு உள்ளாகி இருக்கலாம் என எண்ணப்படுகிறது. சிந்துவெளி மக்கள் தொழில் நுட்பத்தில் சிறந்து விளங்கியிருந்ததாகத் தெரிகிறது. அவர்கள் நகரப்பகுதிகளை நன்கு திட்டமிட்டு வடிவமைத்துள்ளனர். பெரிய நீராடுதுறை, வடிகால் வசதிகள், நீண்ட சாலை அமைப்புகள், தானியக் களஞ்சியங்கள் ஆகியவை அவற்றுள் அடங்கும். அவர்கள் எழுத்துக்கலையில் வல்லவர்களாக விளங்கினர் என்பதற்குச் சான்றாக ஏறக்குறைய 4000 பொறிப்புகளை (inscriptions) மிருதுவான வழலைக் கற்களிலும் உலோகத் தகடுகளிலும் விட்டுச்சென்றுள்ளனர். இப்பொறிப்புகளில் இடம்பெற்றுள்ள வாசகங்களை (text) இதுவரை எவரும் படித்தறிந்திலர்.

சிந்துவெளி நாகரிகத்தின் கண்டுபிடிப்பு

சிந்துவெளியில் ஒரு நாகரிகம் ஏறத்தாழ 4000 ஆண்டுகளுக்கு முன்பு மலர்ந்திருந்தது என்ற தகவல் திரு ஆர்.டி. பானர்ஜி 1921-ஆம் ஆண்டு மேற்கொண்ட அகழ்வாராய்ச்சியின்போது தெரியவந்தது. மொகஞ்சதாரோ, ஹரப்பா, சாநுதரோ, லோத்தல், காளிபங்கன் ஆகிய இடங்களில் அகழ்வுப்பணிகள் விரிவாக மேற்கொள்ளப்பட்டுள்ளன. திருவாளர்கள் மார்ஷல், மாக்கி, வாட்ஸ் ஆகியோர் மேற்கொண்ட அகழ்வாராய்ச்சிகளின் பயனாக பல அரிய தொல்பொருட்கள் நமக்குக் கிடைத்துள்ளன. இவற்றுள் பொறிக்கப்பட்டுள்ள எழுத்துக்களை வாசிக்கப் பலர் முயன்றுள்ளனர். அவர்களுள் திருவாளர்கள் ஜி.ஆர். ஹன்டர், எஸ்.ஆர். ராவ், வால்டர் ஃவேர்செர்விஸ், ஆஸ்கோ பர்ப்போலா, கோஸ்கென்னிமி, ஐராவதம் மகாதேவன், மதுசூதன் மிஸ்ரா, ஜா. ராஜாராம், குருமூர்த்தி, பி.வி. சுப்பராயப்பா, இரா. மதிவாணன் ஆகியோர் அடங்குவர். ஐராவதம் மகாதேவன் 1970-களில் சுற்றுப்பயணம் பல

மேற்கொண்டு சிந்துவெளி மூலங்களிலிருந்து பட உருக்களைப் பதிவுசெய்து பின்னர் அவற்றைத் தொகுத்து 1977-இல் இந்தியத் தொல்லியல் துறையின் பதிப்பாக நூல் ஒன்றை வெளியிட்டுள்ளார். அதில் சிந்துவெளி முத்திரைகளில் காணப்படும் எழுத்துக்களின் பட்டியல் தரப்பட்டுள்ளது.

சிந்துவெளி வாசகங்கள் எத்திசையில் அமைகின்றன?

ஐராவதம் மகாதேவன் ஆய்வுக்கு எடுத்துக்கொண்ட பொருள்களின் எண்ணிக்கை 2906. இவற்றுள் 3573 வரிகள் (lines) உரையில் (text) காணப்படுகின்றன. ஓர் உரையில் உயர் அளவாக 7 வரிகள் பொறிக்கப் பட்டுள்ளன. ஒரு வரியில் உயர் அளவாக 14 எழுத்துக்கள் பதிவாகியுள்ளன. அனைத்து ஆவணங்களிலுள்ள மொத்த எழுத்துக்களின் எண்ணிக்கை 13372 ஆகும். இவற்றுள் 417 தனித்த எழுத்துருக்கள் இடம்பெற்றுள்ளன. இவ்வுருக்களின் இரண்டு மட்டும் 15% அளவில் திரும்பத் திரும்பப் பயன்படுத்தப்பட்டுள்ளன. அவை: இரண்டு காதுகள் கொண்ட குவளை உருவும் இரட்டை மேற்கோள் போலத் தோற்றமளிக்கும் உருவும் ஆகும்.

பொறிப்புகள் சிலவற்றுள் விலங்கு உரு தென்படுகிறது. அதன் மேற்பகுதியி லிருந்து தலைப்பகுதி நோக்கி எழுத்துக்கூட்டிப் படித்தல் வேண்டும். இந்த முறைமை பெரும்பாலான பொறிப்புகளுக்குப் பொருந்தி வருகின்றது. சிந்துவெளி வாசகங்களை வலமிருந்து இடமாகப் படிக்க வேண்டும் என ஐராவதம் மகாதேவன் கூறுகின்றார். பொறிப்பில், வலக்கோடியில் இடம்பெறும் உரு தொடக்க எழுத்தாகக் கொள்ளப் பட்டுள்ளது. அதன்அடிப்படையில் எழுத்துப் புழக்க (frequency) அட்டவணை உருவாக்கப்பட்டுள்ளது.

சிந்துவெளி உருக்கள் எம்மொழியைச் சார்ந்தவை?

இந்தியத் துணைக்கண்டத்தில் அரசோச்சிய இரண்டு செம்மொழிகள் (classical languages) தமிழும் சமஸ்கிருதமும் ஆகும். இவை காலத்தால் 2000 ஆண்டுகட்கும் மேலான பழமை உடையன. இம்மொழிகளில் கிடைக்கும் மிகப் பழமையான நூலே இலக்கண நூலாக இருப்பதால் அம்மொழிகளிலுள்ள இலக்கியங்கள் குறைந்தது ஓராயிரம் ஆண்டுகட்கு முன்னமேயே உருவாகி இருத்தல் வேண்டும் என்பர் அறிஞர் பெருமக்கள். எனவே சிந்துவெளி உருக்கள் இச்செம்மொழிகளுள் ஒன்றைச் சார்ந்தனவா என ஆழ்ந்த அக்கறையோடு அலசி ஆராயப்படல் வேண்டும். இம்மொழி களுக்குப் பொதுவானதும் புறம்பானதுமான எழுத்துக்கள் படம் 1-இல் காட்டப்பட்டுள்ளன.

தமிழும் சமஸ்கிருதமும் வெவ்வேறு மொழி இனத்தைச் சேர்ந்தவை. சமஸ்கிருதம் இந்திய-ஐரோப்பிய மொழிக் குடும்பத்தைச் சார்ந்த உட்பிணைப்பு (inflexional) மொழியாகும். தமிழோ திராவிட மொழிக் குடும்பத்தைச் சார்ந்த ஒட்டுநிலை (agglutinative) மொழியாகும். இம்மொழிகளில் இடம்பெற்றுள்ள உடல்-உறுப்புப் பெயர்களும் தாவர-விலங்கினப் பெயர்களும் இதனைச் சுட்டுகின்றன.

கட்டுரை ஆசிரியரின் ஆய்வு

சிந்துவெளி முத்திரைகளில் கிடைத்துள்ள தனித்த உருக்களின் எண்ணிக்கை 417. இவ்வுருக்கள் தமிழுக்கு உரியனவையா சமஸ்கிருதத்திற்கு உரியனவையா என ஆராயப்படல் வேண்டும். இக்கட்டுரை ஆசிரியர் சிந்துவெளி உரைப்பகுதியைத் தமிழ் என்க்கொண்டு ஆராய்ந்துள்ளார். பண்டையத் தமிழ் இலக்கியங்கள் பலவும் செய்யுள் வடிவில் எழுதப்பட்டுள்ளன. அவை ஆசிரியப்பா, வெண்பா ஆகிய பாவினங்களில் அடங்கும். உரைச் சிக்கனம் கருதியும் கால முயற்சி மிகாமலும் மனனம் செய்ய எளிதாக இருக்கும் பொருட்டும் செய்யுள் வடிவம் தெரிவு செய்யப்பட்டது. கருத்துக்களை வெண்பா வடிவில் வடிக்க கூடுதல் மொழிப்பயிற்சி இன்றியமையாதது. திருக்குறள் வெண்பா வடிவில் அமைந்த பழமையான அற நூலாகும். வெண்பாவின் ஈற்றடி இறுதிச்சீர் 'நாள்', 'காசு', 'மலர்', 'பிறப்பு' ஆகிய வாய்பாடுகளைக் கொண்டு முடிதல் வேண்டும். இவற்றுள் 'நாள்', 'காசு' வாய்பாடில் அமையும் சொற்கள் ஈரெழுத்துகள் கொண்ட அடிச்சொற்களாக (root words) அமைகின்றன.

'நாள்' வாய்பாட்டில் பொருள் உணர்த்தும் அடிச்சொற்கள் 356 உள்ளன. காசு வாய்பாட்டில் 121 அடிச்சொற்கள் உள்ளன. இவற்றின் கூட்டு எண்ணிக்கை 477. மக்கள் குமுகாயம் (society) அடிப்படைச் சொற்களை அமைத்துக்கொண்ட பிறகே அம்மொழியில் பயிலும் எழுத்துக்களைப் பற்றி ஆராய்ந்திருப்பர். அவ்வகையில் தோன்றிய அடிச்சொற்களாக சிந்துவெளி உருக்கள் அமைந்திருக்கக்கூடும் என்பது கட்டுரை ஆசிரியரின் உள்ளக்கிடக்கை. இதற்கு வலுசேர்க்கும் வகையில் சிந்துவெளி உரைகளில் காணப்படும் தனித்த உருக்களின் எண்ணிக்கை 400-க்கு அணித்தமாக வருகின்றது.

'நாள்' வாய்பாட்டில் அமையும் சில முக்கிய சொற்கள் வருமாறு: அ,இ,உ, ஆ,ஈ, கா,கை,கோ, சா,தா,தீ, நா,நீ,பா, பை,போ,மா, மை,வா,ஆண், ஆம்,ஆல்,ஆள், உண்,உள்,உன், ஊண்,ஊர்,ஊழ், எண்,எள்,என், ஏர்,ஏழ்,ஏன், ஓர்,கண், கல், கள்,காண்,காய், கால்,கீழ்,கூழ், கூன்,கேள்,கொல், கோல்,சாய்,சால், சீர்,சூழ்,சூழ், செய்,செல்,சேய், சேர்,சொல், தன், தாய்,தாள்,தூண், தூள்,தேள்,தேன், தோல்,தோள், நம்,நாம்,நாய், நார்,நால்,நாள், நான்,நில்,நீர், நூல்,நெய்,நெல், நொ,நோய், பல்,பாய், பார், பால்,புண்,புல், பெண்,பொய்,பொன், போர்,மண்,மான், மீன்,முள்,மெய், மேல்,யார்,வாய், வால்,வாள்,வான், வில்,வேர்,வேல்.

'காசு' வாய்பாட்டில் அமையும் சில முக்கிய சொற்கள் வருமாறு: ஆடு,ஆறு,ஈறு, ஊது,ஏடு,ஏது, ஏறு,ஓடு,ஓது, காசு,காடு,காது, கூடு,கூறு,கேடு, சாறு,சீறு,சூடு, சேறு,சோறு,தீது, தூசு,தேடு,தேறு, நாடு,நூறு,பேசு, மாடு,மீது,மீறு,மூடு,மேடு,மோது, யாது,வீடு,வீசு, வேறு.

வகைப்படுத்தப்பட்டுள்ள சிந்துவெளி உருக்கள்

சிந்துவெளி எழுத்துக்களினின்று 140 படவுருக்கள் பிரித்தெடுக்கப் பட்டு வகைப்படுத்தி படம் 2-இல் தரப்பட்டுள்ளன. இவை, மீன் (fish) உரு, குவளை (cup) உரு மற்றும் கீற்று (stroke) உரு ஆகியவற்றோடு தொடர்புடையன. இவற்றுள் மீன்

உரு, மனித உரு, குவளை உரு ஆகியன சொற்றொடக்கத்தில் வருகின்ற அதிகப் புழக்கமிக்க மெய்களாக இருக்கக்கூடும். அவற்றுள் காணப்படும் சிற்சில மாற்றங்கள் 12 உயிர்கள் ஏறிவருவதை உணர்த்தக்கூடும். கீற்றுக்கோடு உருக்களிலும் மூன்று வகை இருப்பதாகத் தெரிய வருகிறது. அவை 12 எண்ணிக்கை வரை நீளுகிறது. இந்தக் கீற்றுக்கோடுகள் எண்களை உணர்த்துவனவாக அமையலாம். இவை தமிழிலுள்ள 12 உயிரெழுத்துக்களாகவோ (vowels) துணையெழுத்துக்களாகவோ (vowel modifiers) இருத்தற்கும் வாய்ப்புண்டு. சிந்துவெளி எழுத்துக்களில் குறிப்பாக மீன் உருக்களிலும் 12 தனித்த வடிவங்கள் இருக்கின்றன. இவை தமிழ் நெடுங்கணக்கில் இடம்பெற்றுள்ள 12 உயிர் எழுத்துக்களைக் குறிப்பால் உணர்த்தவல்லனவோ என ஆராயப்படல் வேண்டும்.

மிகுந்த கூட்டுருக்களைக் கொண்டு அதிக முக்கியத்துவம் வாய்ந்ததாகத் தோன்றும் மனித உருவின் வருகை (occurrence) சொற்றொடக்கத்தில் அருகி வருவதாகவும் சொல் இறுதியில் மிகுந்து வருவதாகவும் ஐராவதம் மகாதேவனின் அட்டவணை காட்டுகின்றது. இக்கூற்று உளங்கொள்வதற்கு ஏற்புடையதாக இல்லை. சிந்துவெளி வாசகங்களை இடமிருந்து வலம் நோக்கிப் படிக்க முற்படுவதாகக் கொண்டால் அவரது அட்டவணையிலுள்ள சொல் இறுதி வருகை எண்கள் உரையில் தொடங்கும் வருகை எண்களாக மாறிவிடும். இவ் அடிப்படையில் ஆய்வு மேற்கொள்ளுதல் பொருத்தமாகவும் பயனுள்ளதாகவும் இருக்கும் என்பது கட்டுரை ஆசிரியரின் முடிவு.

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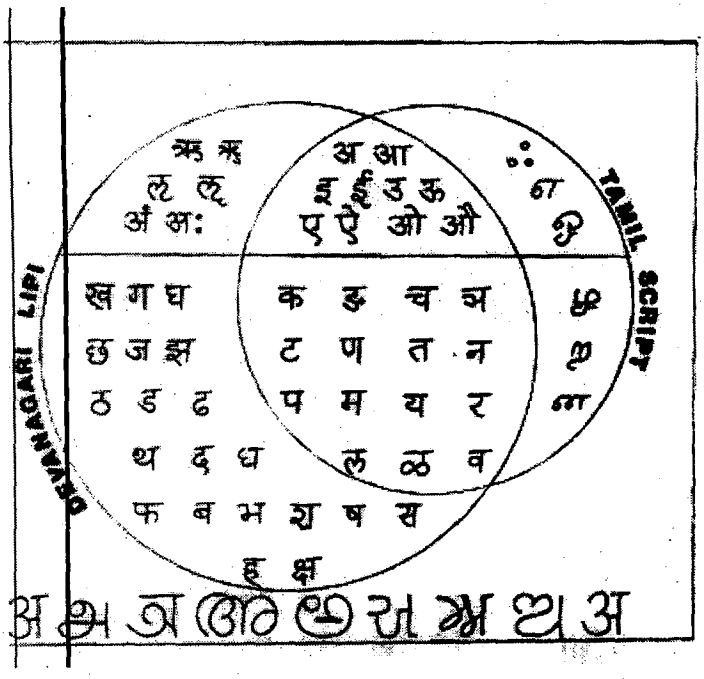
DEVANAGARI LIPI
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படம் – 1



படம் – 2

THE NEOLITHIC CULTURE OF SOUTH INDIA AND ITS RELATIONSHIP WITH THE INDUS CIVILIZATION

Ravi Korisettar

Introduction: the Changing Concept of Neolithic

In the early nineteenth century the word 'Neolithic' was used to denote the technological progress of man when he started manufacturing polished stone axes and earthenware pottery. Evolutionary anthropologists like E.B. Tylor identified several socio-economic stages like Savagery, Barbarism and Civilization to denote the progress of mankind. According to him it was during the stage of Barbarism that man invented the technique of pottery manufacturing and began to domesticate select animals, which were his source of assured food supply. But the true significance of the word Neolithic was correctly realized by Gordon Childe, who traced the spread of the Neolithic way of life from western Asia and Egypt across Anatolia and then to Europe in a 3000 year span. After the Second World War, this hypothesis was tested and buttressed by intensive field work in the Fertile Crescent. Subsequent research on the Neolithic has established the fact that it was during the Neolithic stage that man discovered the means to control his environment. At this stage man had tamed nature to the extent that he could multiply his food supply by artificial means, by increasing the productivity of wild plants and by controlling the movement and breeding of wild animals. Thus the Neolithic stage is associated with the emergence of sedentism, agriculture including domestication of plants and animals.

It has long been recognized that the origins of agriculture, upon which the first settlement depends must lie in Western Asia since the natural habitat of wild grains of wheat and barley was in this geographical area. This also was the habitat of most important domestic animals like sheep and goat. In other words it also meant that wheat and barley were the first food crops cultivated by man. It is generally believed that this wheat/barley - sheep/goat complex developed in this zone and spread quickly throughout from the Levant to Afghanistan. As

regards the circumstances under which the first domestication and cultivation took place several explanatory theories/models have been proposed. Following Raphael Pumpelly's 'oasis theory' Gordon Childe further elaborated it and proposed the enforced propinquity theory that was a direct result of Post-Pleistocene desiccation, but this hypothesis is not substantiated by modern researches. As for the probable causes of the first domestication of food plants and animals, changing climate during the early Holocene, technical advancement of early Neolithic communities to a level where they could exploit environment, territorial realism, and the supposedly rapid increase in the population has been suggested but none of them in itself is capable of explaining this complex phenomenon. Recent studies on palaeoclimate changes at high resolution have also suggested the cold Younger Dryas episode as having influenced the origins of agriculture. What needs particular emphasis is the fact that domestication was a process which took considerable time and domestication of each type of domesticable animals and plant species would have taken place in different ecological niches at different times. Many archaeologists do not subscribe to such theories and would like to look at this economic transformation in the economy from a symbolic perspective. Jacques Cauvin (2000) has championed the issue of origin of agriculture and rejects the emphasis on ecology and environment as the driving force. Instead he emphasizes that primacy should be given to a restructuring of human mentality from the 13,000 to 10,000 years BP. According to him the Neolithic is much more than an economic transition and it "coincided with a transformation in the world view of the prehistoric societies concerned". He further "highlights the importance of cognitive factors and the socio-cultural changes which result there from as the principal motivation for the Neolithic Revolution. Based on the new findings from the Levantine sites he argues that agricultural economy did not start until the 9th millennium BC; that it did not coincide with the dry phase; and on the contrary it was associated with resource abundance. He observes a reordering of symbolic material beginning in the 10th millennium BC and thus he "proposes a cognitive change which anticipates the economic change and becomes manifest within it".

Recent discoveries in Western Asia, China and Southeast Asia

Geographically the Indian subcontinent lies between the countries of Western Asia and those of Southeast and East Asia. In the north the subcontinent is bounded by the mighty Himalayas but the passes in south-eastern India have permitted the migration of peoples, cultures and ideas through time. Therefore, it would be worthwhile to evaluate the recent evidence on this subject in these contiguous regions of the Old World.

Western Asia

Among the important sites where excavations have been conducted in recent years mention may be made of Abu Hureyra in north Syria, Ain Ghazal on the outskirts of Amman, Gilgal in the Jordan Valley, Grittile in southeastern Turkey, Umm Dabaghiyah in Iraq and Ganj Dareh in the Kangavar region of the Central Zagros Highlands.

The excavations at Abu Hureyra show that cereal cultivation started as early as the Mesolithic stage dated to 8500 BC. After several centuries of occupation the Mesolithic settlement was deserted and it was reoccupied during the Archaic (Aceramic) Neolithic stage dated to c. 7500 BC. At this stage the settlement at Abu Hureyra grew and became the largest of all the archaic settlements in the Levant. The multi-roomed rectilinear houses made of mud-bricks were coloured black and occasionally had red schematic motifs. Agriculture was widely practised and the economy rested on the cultivation of cereals and pulses. Whereas it is only probable that the Mesolithic predecessors cultivated einkorn wheat, barley and lentils, it is certain that the Archaic Neolithic villages definitely cultivated these grains along with a new variety of wheat, i.e. emmer. Other noteworthy features are that Abu Hureyra became a centre of trade at this stage. It regularly received obsidian from several sources in Turkey, along with jadeite, serpentine, agate and malachite. Soapstone came from the Zagros Mountains, turquoise from the Sinai and cowrie shells from the Red Sea. This settlement continued to flourish through the Developed Neolithic (Ceramic Neolithic) phase in the 6th millennium BC and it was eventually abandoned around 5500 BC.

Ain Ghazal, located in Wadi Jarqa on the outskirts of Amman, was excavated for three seasons during 1982-85 and it brought forth 9 major constructional phases which in turn gave a culture sequence of Pre-Pottery Neolithic B (dated to 7250 - 6200 BC), Pre-Pottery Neolithic C and the Yarmoukian culture. Ain Ghazal is important because of the fact that it is one of the largest early Neolithic towns, three times the size of Jericho and exceeded in size only by Tell Abu Hureyra. Among the outstanding discoveries of Pre-Pottery Neolithic B phase of Ain Ghazal are two human statuary comprising full bodied standing male and female figures and smaller busts between 30 and 45 cm in height. They suggest a close cultural link with contemporary Jericho which also produced similar statues decorated in much the same way. The settlement of Pre-Pottery Neolithic B phase came to an abrupt end shortly after 6200 BC and it was reoccupied by a new group of people with new forms of artefacts and cultural practices (called pre-pottery Neolithic C). They flourished between 6200 and 5800 BC.

Gilgal in the lower Jordon Valley was excavated during 1974-78 and it has

yielded relics of Pre-Pottery Neolithic A stage datable to c. 8200 - 7500 BC. The inhabitants lived in semi-oval structures made of small sized stones and floors coated with lime and flat stones.

Grittile is situated on the west bank of the Euphrates in south-east Turkey and was under excavation during 1981-84. This site was inhabited around 7000 BC during the Pre-Pottery Neolithic B phase and they lived in buildings comprising a series of small rooms made of mud bricks and cultivated emmer wheat, lentils and bitter vetch. The domestic animals include sheep and goats (over 40% of the samples), pigs and cattle (though less common).

Ganj Dareh Tepe., located in a small upland valley in the Kangavar region of Iran was intermittently excavated in 1965, 1967, 1969 , 1971 and 1974. These excavations show that initially it was a small village in the mid-eighth millennium BC which was succeeded by a larger village of mud-walled houses. Cultivated barley was present from the very beginning and crude ceramics appeared in level D (c. 6600 BC). In the north central Jazira of northern Iraq excavation at Umm Dabaghiyah conducted during 1971-74 have brought to light a hitherto unknown culture which can be placed between the Jarmo and Hassuna cultures. The recent radio carbon dates from Tepe Asiab located on the eastern flanks of the Zagros mountains and excavated by Braidwood in the early 1960s, demonstrate that this settlement flourished between 7800 and 6750 BC and the osteological evidence suggests that domestic goat was present at this site at such an early date.

The Indian subcontinent Classification

Neolithic cultures of India have been divided into several provinces by various scholars, and no two scholars agree on one classification. However, taking into account every viewpoint as also the most recent data on the subject the following classification can be proposed:

1. Northwestern India including Kashmir and Swat valleys.
2. The Vindhyan plateau, comprising the Belan Valley and the Ganga Plain.
3. The Kaimur hills and the Chhotanagpur plateau.
4. Mid-eastern region, covering the northern Bihar district of Saran.
5. North-eastern region (Assam complex), covering Assam and adjacent sub-Himalayan regions.
6. Central eastern region (Bengal, Bihar and Orissa complex), covering the

Chhotanagpur with its peneplains extending to West Bengal and Orissa.

7. Southern region, covering peninsular India.

The first Neolithic celt was found as early as 1842 in the Lingsugur area of Raichur District in Karnataka and subsequently in 1860 by H.P.Le Mesurier in the East Tons River in Uttar Pradesh. The first jadeite Neolithic tool was collected by Sir John Lubbock in 1867 (Lubbock 1867) in the Brahmaputra Valley and Captain Beeching collected Neolithic tools from Singhbhum (Bihar). After Independence significant progress was made and Neolithic levels were identified at Kili Ghul Muhammad near Quetta city (now in Pakistan) in 1950. The 1960s and 70s witnessed a spurt of research activity. In the northwest, the discoveries made at Kili Ghul Muhammad were followed by excavations at Sarai Khola in the Potwar plateau, and Ghaligai and Leobanr in the Swat Valley. The Neolithic site of Burzahom was excavated during 1960-71 followed by field investigations at Gufkral, Semthan, etc. in the Kashmir valley. Chirand in Bihar, was excavated in 1963 and again during 1969-73. Field researches were carried out in the Belan Valley during 1967-78 when Chopani Mando, Koldihwa and Mahagara were excavated. In Assam work at Deojali Hading and Selbalgiri which was followed at Sarutaru and Marakdola. Kuchai near Baripada in Orissa was excavated in 1961-62.

The Southern Neolithic Culture

Robert Foote made the first systematic attempt at understanding the lithic technology of the Southern Neolithic group of sites. He developed a typology of stone artefacts that included celts, corn-crushers, chisels (ranging in size), worked scrapers, cores, coreflakes, chisels, and identified the source of raw material as the dolerite dykes that cut through some of the granite hills of the region. On the basis of the dolerite artefacts and flakes he recovered, Foote was able to outline four stages of celt fabrication: chipping, picking (pecking), grinding and polishing. He suggested that knapping was carried out by means of stone hammer in the first stage, pecking by means of sharp pointed striker leading to the third stage of achieving a sharp and even cutting edge by grinding and then polishing; the last two stages were executed by rubbing the pecked stones back and forth on the granite boulders which consequently developed into shallow troughs called grinding grooves. He attempted a quantitative estimate of stone artefacts in terms of their relative abundance and placed them in the following order - strickers, corn-crushers, mealing stones, celts and chisels (being rare). Cores and flakes also rare. Separated rocks and minerals exotic to the site - agate, chert, jasper (nearest source is the Krishna gravels, lydian stone (the nearest source is the

Cuddapah formation) and the locally occurring quartz. These came to Kupgal as raw material and were modified at the site. Foote also reported items of adorment, such as carnelian beads of "good workmanship," steatite beads, and haematite that might have been for purposes of skin decoration. Foote further surmised that the houses were made of perishable material comparable to present-day huts that he observed in the villages around the site.

The Allchins (1968, 1982) propounded a three-phase model for the Southern Neolithic, envisaging a transition from cattle pastorlaism to agro-pastoralism. Between 2300 B.C. and 1000 B.C. emphasis on pastoralism gradually decreased coinciding with the geographic expasion and interaction with contemporary hunter-gathrer and chalcolithic cultures in the larger Deccan province. Lithic, ceramic and copper technoloiges were the main criteria considered for arriving at a developmental sequence of the Southern Neolithic. The majority of excavated sites showed continuity of occupation from Phase II onwards to Early Historic through Iron Age/Megalithic. The ash mound excavations provided type fossils of early pottery as well as radiocarbon dates.

The three phases of the Southern Neolithic as divided by the Allchins were bracketed between 2500 and 1000 B.C.: Phase 1 (2500-2000 B.C.); Phase 2 (2000-1600 B.C.) and; Phase 3 (1600-1000 B.C.). The radiocarbon determinations from Watgal have considerably helped in extending the beginnings of the Southern Neolithic culture by about 500 years to 2900-2800 B.C. (Devaraj et al. 1995). The dating of charcoal from earliest layers of Kodekal produced the date of 3000 - 2800 B.C. for the beginnings of the Southern Neolithic and the ashmound tradition (Paddayya, 1973). The ashmound site of Utnur is dated between 2800 and 2200 B.C (Allchin, 1963). The well dated stratigraphic ceramic sequence at Watgal which can serve as the key to understanding the spatio-temporal evolution of the Southern Neolithic pottery traditions during the three millennia B.C.

According to Fuller et al. (2007), 3000 B.C to 2500 B.C saw the earliest Neolithic habitations without ashmounds. These sites yielded ceramic evidence but no clear evidence of animal herding or plant economy. The geographic distribution of these Neolithic habitations is the Shorapur and Raichur regions and the examples of such sites include Watgal, Kodekal and Utnur. This phase corresponds to the I A phase of the Allchins.

The phase characterized by the first ashmounds include Utnur, Budihal, Palavoy, Brahmagiri A(?), Kudatini(?) and also on the hilltop ashmounds in Bellary District, e.g.Kurugodu, Choudammagudda(?) is dated 2500 B.C. There are neither faunal nor archaeo-botanical evidences from this phase and sites of this phase

are found in Shorapur, Raichur, Bellary(?),Chitradurga, Anantapur. This phase corresponds to the I B phase of the Allchins.

The Neolithic phase which corresponds to the II A phase of the Allchins has fewer ashmounds and villages on hilltops appear in this phase. Budihal Layer 3 village, Banahalli, T. Narsipur are some sites belonging to this phase. Neolithic culture begins to appear beyond the ashmound zone in southernKarnataka, north-east Tamil Nadu. There is no evidence of animal herding in this phase but probably cultivation based on native crops could have occurred. The hilltop ashmounds that become villages e.g. Sannarachamma, Hiregudda are noticed in this phase of Neolithic that is dated to 2000 B.C. Villages begin to appear on Upper Tungabhadra River e.g Hallur and Paiyampalli. There is abundant archaeobotanical evidence for cultivation of native crops and also evidence of wheat and barley. There is abundant faunal evidence too from this phase which is correlated to the II B phase of the Allchins.

In the Neolithic III phase of the Allchins dated to 1800 B.C. there is continuity of the village settlements at Sannarachamma and Hiregudda. The Phases I/II at Tekkalakota could possibly belong to this phase. There are appearances of the Neolithic in the Kunderu Basin and Cuddapah district. Many sites comparable to the Malwa/early Jorwe of northern Peninsula belong to this phase. There are reports of chicken bone from several sites of this phase. There is evidence for crops of African origin *c.* 1500 BC. Possible beginnings of arboriculture, fibre crops and textile production could have taken place in this phase. Copper and gold objects are also recovered from this phase.

Megalithic transition in the pre-Iron Age is dated to 1400 B.C. Although villages continued, some hilltop settlements are abandoned in this phase. Late ashmound formations like in Velpumudugu cease. Megalithic pottery and burials begin to appear in eastern Karnataka in this phase. By the end of this period, megaliths in wider region of Tamil Nadu and eastern Maharashtra begin to appear. This Megalithic period is characterized by wheelmade ceramics, specialized stone axe workshops. There is evidence of iron implements and faunal remains suggesting the presence of horse from this period.

The classic Megalithic period dated to 800 B.C reveals the abandonment of hill top villages and the widespread distribution of Megalithic burials including inland Tamil Nadu. There are clear evidences of iron working and horses in this period. Earliest evidence of rice cultivation in South India is seen from Veerapuram. The Late Megalithic/ Early Historic period dated to 300 B.C to 100 A.D. saw continuing presence of Megalithic burials and consequently there cease towards

the end of this period. Early agricultural settlements make their appearance on plains like in inland southern Tamil Nadu. Rice cultivation was widely adopted in this phase.

EXCAVATED NEOLITHIC SITES IN SOUTH INDIA

Introduction

Excavations at Brahmagiri laid the foundation for placing the Southern Neolithic in its broader geographical and chronological context. The Brahmagiri excavations revealed a continuous occupation from the Upper Neolithic through the Early Historic. The upper levels designated as the Andhra Culture included rouletted ware in association with red pottery decorated with criss-cross yellow paintings. Below this was the Megalithic phase characterised by cist-burials, well-polished Red and Black Ware and Red Slipped Ware. Beneath the Megalithic phase was the deep stratified deposit of stone axes, burials in crude handmade urns, microliths of quartz, agate, and occasional copper and bronze objects. This excavation provided a relative chronological sequence of cultures.

In the 1950s two British archaeologists, Raymond Allchin and F. E. Zeuner made contributions to Neolithic archaeology. Both scholars took an interest in understanding the origins and make-up of the Deccan ashmounds, and carried out complementary research. Zeuner visited a number of ashmounds and sampled the ash for chemical and microscopic study. Allchin, on the other hand, undertook a survey in the Raichur Doab and excavation of both habitation site and an ashmound. Zeuner was able to establish beyond reasonble doubt that the ashmound originated from dung, presumably of cattle, as they were similar in their chemical composition as well as including large amounts of silicified grass cells (which would today be called phytoliths), as one expects to find in the dung of grazing animals. Allchin's excavation evidence from Utnur indiatced that the ashmound there was associated with a rectangular, post-hole defined enclosure, interpreted as a cattle pen. In addition, it became apparent that the accumulations of cattle dung been episodically burnt, perhaps as part of a regular cycle, which may well have had symbolic or ritual significance. Exploration and a number of excavations were undertaken by the Archaeological Survey of India and the state departments of archaeology. The Archaeological Survey of India carried out several excavations after Independence. First among them was Maski, a series of excavations were conducted at Nagarjunakonda in the Lower Krishna val-

ley. Short reports of excavations at Kesarapalle near Ganavaram in the Krishna district, Andhra Pradesh; Paiyampalli, in the North Arcot district, Tamil Nadu; Budhitittu in Mysore District in the Kaveri valley and Singanapalle in the Kurnool district, Andhra Pradesh are importanat contributions. Other sites included, T. Narsipur; Hemmige; Tekkalakota; Hallur; Sanganakallu; Kupgal, Jami; Paradesipalem; Elchuru; and Banahalli; Terdal and Veerapuram.

Brahmagiri

At Brahmagiri pottery was all handmade, crude, coarse fabric with a thin slip of clay. It was grouped into two broad wares 1A and 1B. The 1B ware was confined to burial urns - dull mottled grey colour, with a coarse texture a conspicuous miraculous inclusions. In ware 1A there are two categories, (a) painted pottery and (b) incised pottery. The painted pottery had either a red or buff slip. The red slipped pottery was burnished and salt-glazed. The painted decoration, when present, was applied after firing with ochre. The incised pottery bears designs of a herring-bone or criss-cross patterns. The painted pottery has two varieties (a) red burnished slipped ware with purple painted designs and (b) red, burnished slipped ware with purple paint and unburnished buff slipped ware.

Sanganakallu, Sanarachamma Hill

The Neolithic was here considered Phase II, with a preceding dolerite flake industry. Within the Neoloithic two subperiods were recognised: Subperiod 1 is 'True Neolithic' characterised by coarse brown and black pottery with a dominance of pale grey ware. In Subperiod 2 pottery is represented by pale gery ware along with the dominant brown and black wares. A few sherds with violet and purple paintings on a dull background were also found. In general the Neolithic pottery is crude and coarse in fabric all of which is handmade, some show burnished types.

Piklihal

At Piklihal Pottery is broadly divided into A ware and AB ware, with subtypes within them based on distinctive fabric types. As at Brahmagiri all Piklihal pottery is either handmade or built on a slow turn-table. The A ware in all its manifestations is typical of the Neolithic. The Neolithic is subdivided into Lower Neolithic (represented by A1, A2 and A3 wares) and Upper Neolithic (A4 and A5

pottery). The Lower Neolithic ceramics show low firing temperatures. The AB ware appears at the end of the Upper Neolithic and on the surface. On the basis of surface treatment of pottery the A wares are calssified into A1 (unburnished and incised decoration), A2 (burnished and unslipped), A3 (burnished and dressed) and A4-A5 (burnished and slipped) varieties and each of these occur in different shades of colour. Among the A3 wares a distinctive burnished black-on-red painted variety attracted the attention of scholars owing to its occurrence in the early levels at a number of excavated sites. At Piklihal this A3 painted pottery occurs in the Lower Neolithic levels and is different from the other painted (unburnished AB ware, comparable to the Jorwe ware of the northern Deccan) pottery occurring mostly on the surface in the levels at the end of the Upper Neolithic. The A3 red variety is unique to Piklihal. The A3 painted variety distinguished itself from other A3 plain varieties as it bears brown ochre to raw sienna dressing. This ware disappears in the Upper Neolithic.

Maski

The large portion of the pottery at Maski is reported to be wheelmade (!). Two broad categories (a) dull grey ware and (b) pinkish buff ware, the fabric is similar to Brahmagiri pottery of 1A. Besides these two wares a small collection of black or chocolate painted over a red slipped surface was made at Maski. Interestingly this pottery is also restricted to the lower levels but without a wide spread occurrence. While the painted black on red ware as noted at Brahmagiri and Piklihal was handmade the Maski variety was wheelmade.

Nagarjunakonda

Neolithic pottery was represented by thick, coarse, handmade and occasionally burnished greyish or brownish wares. Grey ware was generally burnished. Black and cream slipped wares were also found.

Hallur

The Neolithic pottery at Hallur is generally handmade with both burnished and unburnished varieties occur in the later levels (of Phase II), wheelmade pottery appears. The earliest phase at Hallur is represented by a pale grey ware and burnihsed grey ware, both with post-firing ochre painted decoration. In Phase II the latter continues with the disappearance of pale grey ware, as well as the ap-

pearance of black and red ware of Jorwe fabric. Noteworthy is the occurrence of a few sherds of painted pottery in early levels of Phase I, similar to Brahmagiri 1A and Piklihal A3 wares.

T. Narasipur

At T. Narasipur pottery is dominantly represented by grey ware, burnished with a thin slip. Fine-grained non-micaceous variety of fabric is common. The majority are handmade with occasional examples of anvil-and-dabber, and turn-table techniques, and finished under high temperatures but differentially heated.

Hemmige

Hemmige is the only site among the excavated ones where the pale grey ware has not been documented. All the collection is represented by handmade red ware with medium to coarse fabric and slight burnishing. It is observed that owing to uneven firing temperatures the surface bears a range colours like brown, buff or grey.

Ija (also Ieej)

This is a habitation site about 6 km east of Utnur ash mound in the Mahbubnagar district of Andhra Pradesh. The settlement is located on a rivulet draining into the Tungabhadra river. The ceramic varieties included pale grey ware, brown ware, polished black ware and dull red ware, either handmade or use of slow wheel. Painted black-on-red ware (A3) absent.

Hulikallu

Excavations at this ashmound near Kalyandurg in Anantapur District also yielded unburnished grey or black ware, burnished grey, black, buff, pink, perforated and incised wares. The evidence of ocher painted black-on-red ware akin to A3 ware is noteworthy; this group of sites is north of the Brahmagiri complex. Two urn burials, one of them of coarse red ware was covered by a huge stone boulder anticipating the rise of megalithism. Similar examples of stone covered burials are reported from Watgal in the Raichur Doab.

Watgal

The Neolithic at Watgal has been divided into four occupational periods. Period II to Period IV represent the continuous development of the Neolithic occupational sequence at Watgal, ranging between 2700 BC and post- 1500 BC. The Period II has two sub-phases and mark the clear evidence of Neolithic occupation at Watgal. In II A coarse red/grey plain ware and its sub-types such red slipped, burnished red/grey types are common. Burnished red/grey thin, brown

slipped, burnished red/grey with post-fired red ochre paint decorations and black slipped ware represent a minor ceramic population. Until the excavation at Watgal in the heartland of Deccan, it was believed that incised and perforated potteries was generally found from early 2nd millennium BC, but the evidence from Watgal dates these types back 2700 BC.

Table The ceramic sequence from Watgal (quantitative data not presented), those less than 5% are not included, based on Devaraj *et al.* (1995).

Occupation Phase	C-14 date Half-life 5730	Pottery Handmade	Pottery Wheelmade	Other Artefacts
IIA	2700-2300 B.C. Burn Inc, Plain R/G, B/R Sl, R/Buff Sl, R Ocher/Buff, R Ocher/Burn G, Burn Thin, Burn Sl, Dec App, Per base		Nil	
IIB	2300-2000 B.C. Plain R/G, Burn Inc, Burn R/G, B/R Sl, R/Buff Sl, R Ocher/Buff, R Ocher/Burn G, Burn Thin, Dec App, Pinch Rim, Perf Base		Jorwe Bl/r Sl (small qty, but the earliest evidence)	
III	Post-2000 B.C. Burn Inc, R Sl Inc, R Sl, Plain RG, B/R Sl, R/Buff Sl, R Ocher Burn G, Brown Sl, Burn Thin Knob App, Pinch Rim, Dec App, Perf Base		RSW, BRW, Jorwe R/ buff, Jorwe Bl/r Sl, Andhra, BRW D Rim	
IV	Post-1500 B.C.Burn Inc, Burn R/G, R Sl Inc, R Sl, Plain R/G, Coarse G Thin, Knob App, Pinch Rim, Dec App, Perf Base		RSW, BRW, Jorwe Bl/r Sl, Jorwe R/buff, Andra, EH grey	

The abbreviations used above refer to are as follows: Plain R/G - coarse red/grey plain; R Sl- coarse red/grey with red slip; R Sl Inc- coarse red/grey with red slip incised; Burn R/G- coarse red/grey burnished; Burn Inc- burnished incised; Per Base - perforated base; Pinch Rim- coarse red/grey pinched/finger impressed pottery; Dec App- coarse red/grey decorative/finger impressed ap-

plique; R Ochre/Burn G- burnished grey with post-fired red ocher paint; Red Ocher/Buff- buff slip with post-fired red ocher paint; R/Buff Sl- red-on-buff slip; Bl/R- black-on-red slip; urn Thin- coarse red/grey thin; Coarse G Thin- coarse grey thin; Brown Sl- coarse red/grey with brown slip; RSW- red slipped ware; BRW- Brahmagiri style black-and-red ware; Jorwe Bl/r Sl- Jorwe black on red slip; Andhra- Andhra ware (russet coated); EH Grey- early historic grey.

In Andhra Pradesh the survey of Cuddappah, Kurnool and Anantapur districts has brought to light similar series of pottery, such as red ware and grey ware typical of the Bellary and Raichur regions. Palavoy ash mound excavation has also yielded black-on-red painted ware.

BURIALS FROM NEOLITHIC EXCAVATIONS

The excavation reports appearing from the 1950s were more elaborate in including the evidence of skeletal and bio-archaeological material wherever they were encountered. Skeletal features and burial practices as evidence of extraneous origins of the people fusing with the local populations. Cultural interpretation of burial data revolved around the mode of disposal of the dead, the significance of the funerary goods as well as the evidence of headrests from Tekkalakota, T. Narsipur, and Budititu (the latter two in the upper Kaveri valley). Human skeletal remains were analysed for osteography, racial affinities, gender and age of death. Evidence for skeletal remains chiefly comes from burials, both pit and urn burials (single and double urn burials in case of infants and multiple urn burials in case of adults) which are typical of this culture any where in the Southern Neolithic province. At Brahmagiri 21 burials (18 urn burials of children), Piklihal 3 burials, Utnur 1 burial, 6 from Nagarjunakonda (one urn burial of a child), Tekkalakota 18 burials (6 child burials), at Hallur 2 burials, 1 at T. Narsipur another 2 were encountered, majority of them from Tekkalakota were fractional burials imposing restrictions on a detailed study. Skulls from Piklihal are mesocephalic and slightly prognathus. Wheras the evidence from Nagarjunakonda reveals dolicocephalus variety, with a long head, robust and wide-nosed betraying similarity with the skeletal series from Langhnaj, Nevasa and Tekkalakota.

The higher frequency of child burials is indicative of high infant mortality obviously reflecting on the low immunity in that age group. There are several pastoral communities such as Lamanis, Kurubas and Gollas in the region, practising transhumance on the one hand and on the other at various stages of aculturation. The Lamani Tandas are conspicuous by their presence in the proximity or contiguity with the Neolithic sites in the Gulbarga-Bijapur-Raichur-Bellary-Anantapur region. It would be interesting to explore the similarities between the skeletal features from the Neolithic burials and the pastoral communities for plausible direct ethnographic analogies.

While pit burials remained unmarked in the habitation areas, there are instances of marked burials such as a stone layerd burial at Piklihal, needs to be

taken into account in conjunction with the adult urn burials from Tekkalakota and numerous child urn burials from all the excavated sites with the exception of Sanganakal and Maski (excavated areas did not produce burials) to trace the beginning of marked burials and the eventual trend towards megalithism.... (agreeing with Watgal evidence), a strong pointer to assess the ideas of culural intrusion, overlap, transitions, replacement versus continuity and fusion of culture traditions.

Cranio-morphometry and non-metric traits of the Southern Neolithic skeletal series are found to possess uniform features over the larger Deccan peninsula, the region south of the Narmada, and represent a homogeneous population. The skeletal series needs to be subject to rigorous palaeodemogrphic studies, similar to those carried out on the Harappan and Ganga Valley Mesolithic populations. In the given cultural continuum of the Southern Neolithic with the developing mixed economies a detailed analysis of the skeletal series from the point of view of physical and pathological adaptations is a desideratum to be able to compare with the Harappans, who were their contemporaries though spatially removed from each other. In general the burials remains represent subadults, the reasons for this need to be answered.

NEOLITHIC ARCHAEO-ZOOLOGY: THE STUDY OF DOMESTICATED AND HUNTED ANIMAL REMAINS

The study of animal remains by zoologists/veternary scientists became an important constituent of excavations and reconstruction of the faunal background of the Neolithic culture. The archaeological study of collected bones greatly helped in inferring the inclusion of meat component in human diet and other secondary products from the domesticated animals, the significance of bone tools (such as arrowheads, scrapers, awls, needles, points, harpoons, chisels) in the absence of metal technology, etc. Cattle, buffaloes, sheep, goats, pigs, the ass, the horse and dogs constitute the domestic animals in that order of abundance. Though horse is reported its place in the Southern Neolithic is as yet uncertain, but appears to be associated with the late Neolithic. Rats and squirrels are rare but present at sites like Tekkalakota. Cattle bones are dominant in both the habitation and ash mound sites. Not much information on the provanane of the breed of cattle domesticated is available, two breeds of cattle have been identified (a) longhorned (*acutifrons*), slender bodied and humped (the zebu) and (b) massive and reltively short. The first veriety is perfectly depicted in the rock bruisings at Velpumadugu, 20 km southeast of Bellary in Anantapur district. Because of overriding dominance of cattle bones at the sites we feel that there has been complete bias in inferring cattle-pastoralism as the chief component of the Neolithic economy. The role sheep-goat has relegated to the secondary postion, reanalysis of the bones and the contribution of sheep and goat in shaping the structure of pastoralism is of paramount impotance. *Bos, Bubalus, Capra* and *Ovis* invariably occur at almost all the Chaloclithic sites between central India and the southern Deccan in the time period from 2500 BC onwards. Cattle possible native, Bubalis,

and pig. definitely goat and sheep from Near East, sheep may be also Baluchistan. Chicken Gangetic region, introduced in Southern Neolithic

ARCHAEOBOTANY: THE STUDY OF NEOLITHIC PLANT REMAINS

The first observation of plant remains was by Foote who observed and commented on the impression of straw preserved in the cinder slags at Budikanama ash mound near Kudatini in Bellary District (Foote 1914:80). This he identified with of "the great millet (*Holcus sorghum*)", i.e. *Sorghum bicolor*, although it not clear how he came to this conclusion since the stalks of grassers are more or less indistinguishable. This report must therefore be disregarded since more recent, systematic studies have failed top provide evidence of Sorghum.

The clearest aspect of the available evidence is the importance of pulses, especially those of tropical origin which are usually grown in the summer (monsoon) season (*kharif*). Most of these species are of South Asian origin, and some can be attributed, with more or less certainty, to more restricted regions of probable domestication on the peninsula. The most widespread pulse on Southern Neolithic sites is horsegram/ kulthi (*Macrotyloma uniflorum* (Lam.) Verdc., synonym *Dolichos uniflorum* Lam.. Although this species has been generally referred to as *Dolichos biflorus*, this is in fact an invalid name for this crop as the Linnean type was a form of cowpea, for the taxonomy see Verdcourt 1970; Smartt 1990; synopsis in Fuller et al., n.d.). This pulse occurs from the earliest samples, such as the lowest level at Sanganakallu. It has also been recovered from the all regions of the Neolithic thus far sampled. The green gram/ mung (*Vigna radiata* (L.) Wilczek, syn. *Phaeseolus radiatus* L.) is also widespread in through the at least the middle and later periods of the southern Neolithic. The closely related black gram/ urid (*Vigna mungo* (L.) Hepper) is less widely represented in Neolithic samples, although it has been found from late(?) Neolithic of Hallur and from the Iron Age (First Millennium BC) at Veerapuram, Kurnool District.. All of these species are of South Asian origin. As for horsegram no populations of possible wild progenitors have been found, and it is therefore difficult to pinpoint its precise region of origin; perhaps, if the species was native to the plains of India the wild populations are extinct. In the past the wild progenitors of green and black gram were considered the same species, *Phaeseolus sublobatus*. Two other pulses that were probably later additions have been recoverd from Southern Neolithic sites, one of which may have originated in Africa. Pigeon pea/ Tuvar/ Arhar (*Cajanus cajan* (L.) Millsp.) was derived from the wild *Cajanus cajanifolia* (formerly considered a separate genus, *Atylosia*) which is restricted to southern Orissa and Bastar. Archaeobotanical finds are few but suggest that the domesticate was diffusing on the peninsula in the mid-second Millennium BC, i.e. Late Neolithic/Early Jorwe, including Sanganakallu, Peddamudiyam, and Tuljapur Garhi, Maharashtra. Another pulse widely recovered from Second Millennium BC sites on the peninsula is hyacinth bean/sem (*Lablab purpureus* (L.) Sweet).

The staple cereals of the Southern Neolithic were millets: dominated by a foxtail millet (*Setaria* sp.), in some cases to be idenfied with the bristly foxtial (*S.*

verticillata), although the yellow foxtail may also be present. It is also possible that sawa millet (*Echinochloa colona*), another grass that is a natural constituent of the peninsular grasslands is present. Present in the Iron Age, and perhaps coming into cultivation during the later second millenium BC, was kodo millet (*Paspalum scrobiculatum*), which has been found further north from Jorwe period Daimabad and from the Iron Age site of Veerapuram in Kurnool district. The ubiquity and quantity of millets from recently studied sites strongly argues for their use as staple grains, especially *Setaria* sp, although it remains ambiguous as to whether these were actually domesticated or exetnsively gathered in the wild. The high level of purity of the samples, with relatively few other grasses present argues for cultivation.

In addition to the staple food stuffs outlined above, Neolithic folk would have utilized gathered fruits, nuts, vegetables and other produce. Unfortunately there is less evidence for these kinds of food, and generally less opportunity for their use to be preserved archaeologically. Nevertheless fruit pits, and nut shell fragments are often charred, and numerous small, unidentifiable fragments of these types of structures are present. In addition, one fruit which is widely preserved and recovered archaeological is *Ziziphus* sp. (probably *Z. jujuba*) the jujube fruit.

CHRONOLOGY

In the Allchins synthesis the three phases of the Southern Neolithic were bracketed between 2500 and 1000 BC: Phase 1 (2500-2000 BC); Phase 2 (2000-1600 BC) and; Phase 3 (1600-1000 BC). The available dates from a variety of sites both ashmounds and habitation sites and many of them on animal bones, which did not take into account fractionation. There is need for a series of accurate dates to be able to reconstruct the developments of this cultural phenomenon and its relationship with other developments in the Subcontinent, especially the immediate nothern and southern regional cultural groups, and the apparent continuity of cultural development during the three millennia BC. Future datings by the AMS radiocarbon dating might hold new surprises. The suite of radiocarbon dates from Watgal emphasises the need for secure dates from a large number of sites to be able to either propose a working hypothesis or to test a working hypothesis on cultural transform processes operating in the Southern Neolithic complex. The radiocarbon determinations from Watgal have considerably helped in extending the the beginnings of the Southern Neolithic culture by about 500 years.

The Neolithic and Megalithic period represent the most important stage of cultural develop ment during the period from 3000 BC and 1 century AD. While the Neolithic period witnessed the establishment of agricultural society and economies based on diversification of occupations. The Neolithic period witnessed the rise of first farmers and the first villages. The Megalithic period witnessed the full-fledged growth of metal technologies. The Megalithic communities gradually came under the influence of the Mauryan influence that lead to the spread of literacy in south India and the consequent emergence of

historical period. The burial practices typical of the Megalithic period continued into Historical period.

CONCLUDING REMARKS

On the basis of these excavations and other cultural studies the Neolithic development is seen in three phases, characterized in part by changes in technology, especially in pottery production, as well as increases in plausible long-distance imports. The role of trade in the development of Neolithic social complexity and how this was related to or impacted other aspects of society, such as agriculture, craft production, and animal husbandry has not really been explored. Although copper and bronze objects are present in low frequencies in Neolithic phases II and III, it is not evidence for the production of copper locally. Although there are hints that gold mines in the Shorapur Doab were exploited, hard evidence is lacking in terms of the ceramics recovered near these mines; the only gold recovered from a Neolithic sites was Tekkalakota. Pottery and polished stone tools are the hall mark of the southern Neolithic.

All this evidence clearly points towards a highly regional character of the southern Neolithic covering all the three major southern states of south India. Evidence for the typical Neolithic from the region of Kerala is still elusive. Neolithic celts that are typical of the Neolithic period are not found in the context of the Bronze Age Harappan Civilization. And that suggested contact between southern India and the Harappan province is not supported by any tangible evidence and though both these cultural groups appear to be contemporary the intermediate region does not show outposts of either Harappan or Southern Neolithic. The Neolithic sites of the Tamil Nadu plains are relatively younger than the Deccan ones and represent the southward expansion of the Southern Neolithic during the Pahse II of the Allchins scheme. It is interesting to note that celt manufacturing activity increased during the Early iron in South India and those celts reveal diminution in size. In all probability the Celt industry of the Tamil Nadu plains post date the Harappan Bronze age and the Post Harappan in northern and northwest Indian subcontinent are characterized by discontinuation of the Indus script and it is difficult to visualize its use or survival in far south without significant cultural continuity. There is no possible explanation for its geographical spread across the region with a wide gap, while it did not survive in the immediate neighbourhood of the Greater Indus valley. It is coincidental that accidental pit marks on the surface of the celt resemble the so called Indus script, which looks a far fetched idea.