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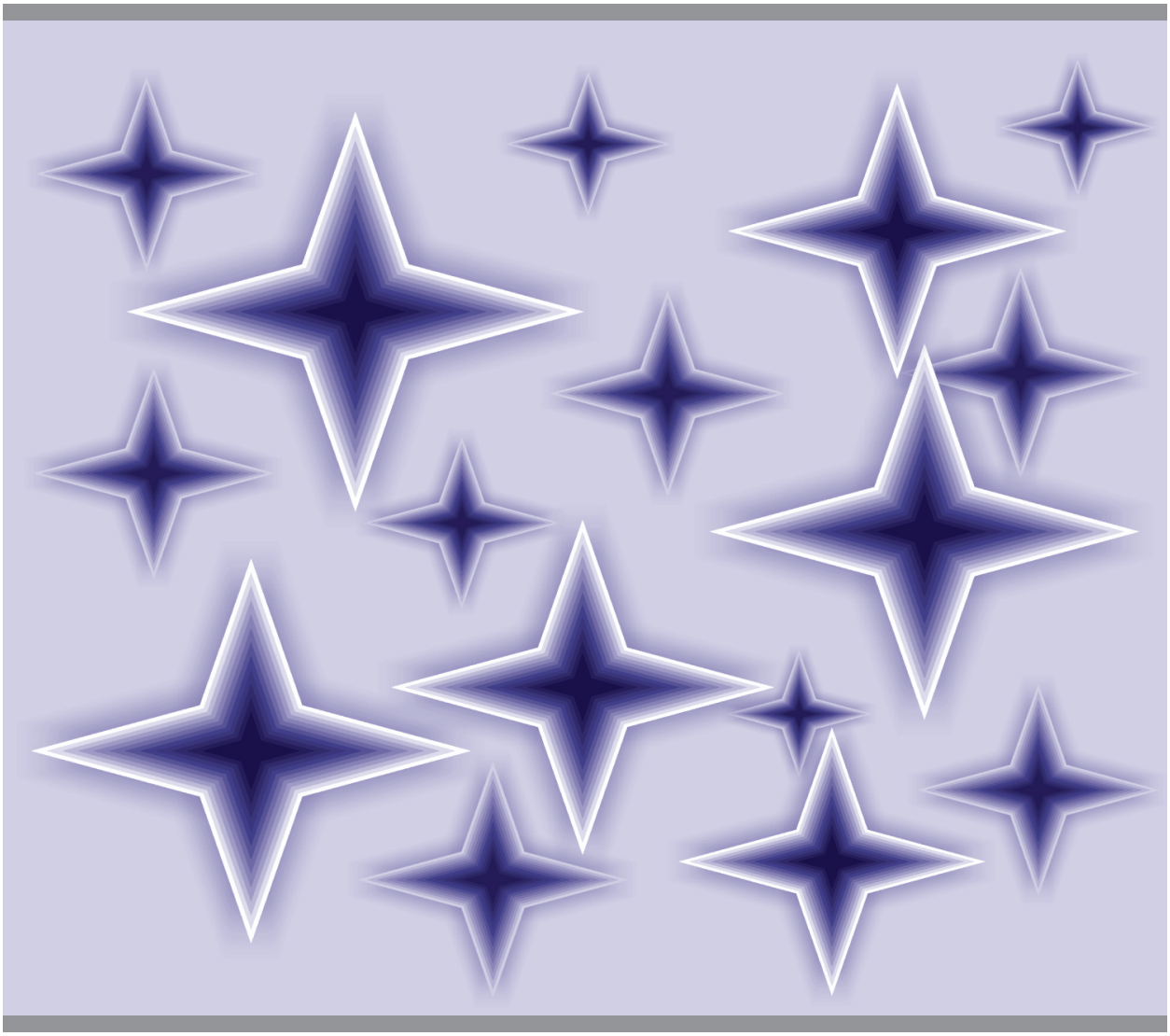

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CONTENTS

THYROID FUNCTION PROFILE IN APPARENTLY HEALTHY CHILDREN LIVING IN A SUB-URBAN COMMUNITY IN NIGERIA

[1]Idonije B.O, [2]Okogun G.R.A, [3]Iribhogbe O.I, [4]Ekhator C.N, [2]Muili A.A, [2]Enehizena O.O, [2]Olatunji B. F

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ABSTRACT: This study was carried out to assess the thyroid function profile in school children resident in Ekpoma, a sub-urban community in Nigeria and to explore the possible effect of weight, height, age and sex on thyroid function. Serum thyrotropin (TSH), triiodothyronine (T3) and total thyroxine (T4) levels were determined in 100 school children (39 males and 61 females) in the 11-15 years age group. This assessment was done between October and December 2009. Their samples were collected and analyzed using microwell ELISA technique. Results showed that the mean serum T3, T4 and TSH levels in the school children were 113.66±40.70 mg/dl, 9.87±2.73 ug/dl and 1.72±1.83 uIU/ml respectively. There was a non significant difference in serum T3, T4 and TSH levels in the school children evaluated when compared with standard reference range ($P>0.05$). The weight and height were not significantly correlated to `serum TSH and T3 levels ($P>0.05$). However, there was a significant negative correlation between the weight of the children and serum T4 levels ($r = -0.194$; $P<0.05$). Additionally, no statistically significant difference was observed between the male and female school children evaluated ($P>0.05$). Conclusively, variation in the serum thyroid profile was observed in school children but these changes were not significantly different from the standard reference range.

[Idonije O,B, Okogun G.R.A, Iribhogbe O.I, Ekhator C.N, Muili A.A, Enehizena O.O and Olatunji B.F. Thyroid Function Profile in Apparently Healthy Children Living in a Semi-Urban Community in Nigeria. Academia Arena, 2011;3(8):1-3] (ISSN 1553-992X). http://www.sciencepub.net.

Key Words: Thyroid Function, Reference Range and Microwell ELISA Technique

INTRODUCTION

Thyroid hormone controls the body's cell metabolism. When thyroid hormones are released into the blood stream, cells increase the rate at which they convert oxygen and nutrients into energy and heat for the body's use. During child's development, thyroid hormone stimulates an increase in growth rate. Release of thyroid hormones also stimulate mental activity and increase the activity of the other hormone producing glands (Sahni, 2008). Thyroxine and triiodothyronine are released into the blood stream in response to conditions such as stress, pregnancy and low level of thyroid hormone in the blood. This condition activates a hormone in the pituitary gland called thyroid stimulating hormones (TSH). TSH regulates the thyroid's production of hormones (Vanjonack et al., 1975). The thyroid gland produces another hormone, calcitonin, in response to high levels of calcium in the blood. Calcitonin causes the kidneys to discharge more calcium into the urine, this raises the amount of calcium stored in the bones (Guyton and Hall, 2006). Adequate supply of iodine is required for the synthesis of thyroid hormones. Based on this premise, a high incidence of goiter is often associated with geographical areas were soil content of iodine is low. However, this is now less so because commonly available salt is artificially iodized (Nduka, 1999). Control of energy expenditure is the primary function of thyroid hormones. In addition, they are indispensable for growth, development and sexual maturation in mammals. Other action includes stimulation of heart rate, heart contraction, stimulation of protein synthesis and carbohydrate metabolism, increase in the synthesis and degradation of cholesterol and triglyceride and increase in vitamin requirements (Burtis and Ashwood, 2003).

MATERIALS AND METHODS

Study Area

This study was conducted in Ekpoma, a semi-urban community in Edo State Nigeria. This community lies between longitude 05^0 04^0E and latitude 05^0 04^0N and 05^0 43^0N (CSSR, 2007) with an estimated population of over 61,870 inhabitants (National Population Census, 2007).

Study Subjects

A total of 100 apparently healthy school children between the ages of 12-16 years were recruited for this study from a secondary school in Ekpoma, after obtaining ethical permission from an ethical review board and appropriate informed consent from the subjects as well as their parents/guardian. The recruited participants were appropriately age and sex matched.

Sample Collection/Analysis

Blood samples (5mls) were collected by venepuncture into a plain container. The samples were spun in a bucket centrifuge at a speed of 2500rps to separate serum from red cells. The serum obtained was stored in a chest freezer at a temperature of -20^{0}C. Serum thyroid hormones (TSH, T3 and T4) were analyzed using microwell ELISA technique as described by (Walker, 1977; Burger and Palet, 1977; Ochei and Kolhatka, 2008).

Data Analysis

Data obtained was analyzed using SPSS version 17 statistical soft ware package. Results were expressed as mean±SD. Pearson's correlation coefficient analysis was also done and a P value of <0.05 was considered significant.

RESULTS

From the study, the mean age, weight and height of the participants in the study is 12.38±1.25 years, 43.89±8.42 kg and 1.42±0.21 meters respectively. As shown in Table 1, the mean serum T3, T4 and TSH levels is 113.66±40.70 mg/dl, 9.87±2.73 ug/dl and 1.72±1.83 uIU/ml respectively. This however, was not significantly different from the standard reference range. There was no significant sex dependent variation in thyroid function profile (Table 2) among male and female participants (P>0.05). There was a significant negative correlation between serum T4 levels and the weight of the participants (r = -0.194; P<0.05) and a significant positive correlation between the TSH levels and the age of the participants (r = 0.123; P<0.05).

Table 1: Thyroid Function Profile in Study Participants

Parameters	Test Group, N=100	Reference Range
T3 (mg/dl)	113.66±40.70	140.00±84.85
T4 (ug/dl)	9.87±2.73	9.00±4.95
TSH (uIU/ml)	1.72±1.83	2.75±3.18

Values are expressed as mean ± SD; P<0.05 is considered significant when compared to reference range as provided by Ochei and Kolhatka, (2008).

Table 2: Sex Dependent Thyroid Function Profile in Study Participants

Parameters	Females, N=61	Males, N = 39
T3 (mg/dl)	116.74±48.25	108.85±23.96
T4 (ug/dl)	9.89±2.97	9.85±2.34
TSH uIU/ml	1.54±1.86	1.99±2.33

Values are expressed as mean ± SD; P<0.05 is considered significant

Table 3: Sex Related Distribution of Anthropometric Indices in Study Participants

Parameters	Females, N=61	Males, N=39
Age (years)	12.25±1.08	12.25±1.46
Height (m)	1.41±0.19	1.43±0.23
Weight (kg)	44.52±8.44	42.90±8.38

Values are expressed as mean ± SD; P<0.05 is considered significant

Table 4: Pearson's Correlation Analysis of Anthropometric Indices and Thyroid Hormones in Study Participants

Parameters	Age (years), N= 100	Height (m), N= 100	Weight (kg), N= 100
T3 (mg/dl)	-0.008	0.058	-0.065
T4 (ug/dl)	-0.055	-0.081	-0.194*
TSH (uIU/ml)	0.123*	-0.025	0.011

Correlation coefficient at P<0.05 is considered significant

DISCUSSION

The study showed that there was no significant alteration in serum T3, T4 and TSH levels in children when compared to control. This may be due to the increased availability of iodized table salts as suggested by (Nduka, 1999). In addition, the thyroid hormone profile in male and female participants was not significantly different. This suggests that thyroid function profile is not sex dependent. However, this finding is in discordance with the findings of Kaloumenou et al., (2010) who reported that female children have a lower TSH, T4 and T3 value when compared to their male counterpart. Our study revealed a negative correlation between serum T3 level and age; this however, was not significant. This finding is in agreement with the study of Mariotti et al., (1993) and Verheecke, (1997) which revealed a decline in serum T3 levels with an increase in age. Serum T3 levels positively correlated with the height's of study participants which is supported by the findings of Ronald et al., (2006) who revealed that excessive skeletal growth often occur in hyperthyroid children causing the child to be considerably taller at an earlier age. There was also a positive correlation between TSH levels and the age of the participants which was statistically significant. However, our study is in agreement with the study of Davey, (1997) which revealed an insignificant alteration in serum T4 levels with advancing age.

CONCLUSION

Conclusively, the serum thyroid profile in the suburban community under survey is quite satisfactory, considering the fact that it falls within the normal reference range. This is hinged to the success of the Nigerian health policy which promotes the sale and consumption of iodized salts.

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Hybrid approach to improve web site design based on web log mining

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ABSTRACT: As we see many websites have a hierarchical organization of content. This organization may be quite different from the organization expected by visitors to the website and sometime it is unclear where a specific document is located. There are many algorithms that automatically search pages in a website whose location is different from where visitors expect to find them. In the above case visitors will backtrack if they do not find the information where they expect it. In this paper an algorithm is present for discovering such expected locations. Expected locations with a significant number of hits are then presented to the website administrator. We also present an algorithm for selecting expected locations (for adding navigation links) to optimize the benefit to the website or the visitor. Beside the structure of the website, users' preference to target pages is another key factor for analyzing the location or node importance. Clearly a specific document which is visited frequently or where users stay for a long while indicates that it has a higher degree of preference. This paper introduces the duration's as a weight of the node to measure the preference. [Navin Kumar Agrawal, Shalini Kushwaha, Rajeev Kumar. Hybrid approach to improve web site design based on web log mining. Academia Arena, 2011;3(8):4-6] (ISSN 1553-992X). http://www.sciencepub.net.

Keyword: Backtracking, milestone coefficient, Expected Location, web log mining, node.

1. Introduction

The evolution of the Internet has lead to an enormous propagation of the available information and the personalization of this information space has become a necessity. The knowledge obtained by learning web user's preferences can be used to improve the effectiveness of their web sites by adapting the web information structure to the users' requirement. Automatic knowledge extraction from web log files can be useful for identifying such reading patterns.

However it is hard to find appropriate tools for analyzing raw web log data to retrieve significant and useful information. Recently, the advantages of data mining techniques for discovering usage patterns from web data (i.e. web log mining or web usage mining) made it possible to mine typical user profiles from the vast amount of access logs. Web usage mining can be viewed as the extraction of usage patterns from access log data containing the behavior characteristics of users.

2. Optimizing the set of Navigation Links

The proposed algorithm is used for finding user's pattern. Before applying this process on the weblogs, preprocessing on weblogs is required for removing the redundant data logs and other non beneficial information for finding the required patterns. So the first preprocessing is done on weblogs.

2.1. Preprocessing web logs:

Preprocessing is done by using the following steps:

Step 1: Data Cleaning

First step in Preprocessing is data cleaning which is used to remove the trashy entries. The following process is used to remove trashy entries:

Algorithm: Data Cleaning

```
For each transaction,
        If transaction T contain any ("404 (not found)","*.css","*.gif"," other trashy entries") Then
                Remove transaction T
        End If
End For
```

Step 2: Relocate the data

After removing the trashy transactions this step is used to rearrange the data according to user IP addresses to form each user's request cluster.

Step3: Identifying Target Pages:

Next step is to identify target pages. If there is a clear separation between content pages and index (or navigation) pages on website then web network topology is used to find out the target pages while if website not have a clear separation between content and index pages, we can use a time threshold to distinguish whether or not a page is a target page. Pages where the visitor spent more time than the threshold are considered target pages. For identifying target pages we can also combine these two methods for websites with hybrid (structured + unstructured) structure.

Step4: Find Expected Location:
1. For each visitor, partition web log such that each subsequence terminates in a target page.
2. For each visitor and target page, find any expected locations for that target page:

Let $\{P_1, P_2, ..., P_n\}$ be the set of visited pages, where P_n is a target page.

Let $B := \phi$ denote the list of backtrack pages.
a) for $i := 2$ to n-2 begin
b) if (($P_{i-1} = P_{i+1}$) or (no link from P_i to P_{i+1}))
c) Add P_i to B. // P_i is a backtrack point.
end
if (B not empty)
Add <P_n, B, P_{n-1}> to <current URL, backtrack list, Actual Location> table

2.2 Algorithm: Optimizing the set of Navigation Links

The proposed algorithm is used for finding the optimized set of navigation links. Below is the procedure for it:

Algorithm: Optimizing the set of Navigation Links

Let L be the list of set of pages recommended by the **Optimize Time** (explained later)
For each page p in L
Calculate **milestone coefficient M (p)** (explained later)
End for
Sort list L according to milestone coefficient M

The page top in the list is milestone node (page) and the one most recommended. This would be the geographical and indication node of entire website with features of high connectivity to other pages and higher level of user preference.

2.2.1 Optimize Time

This algorithm recommends the set of pages that minimize the number of times the visitor has to backtrack, i.e., the number of times the visitor does not find the page in an expected location. The following process is used for this:

Algorithm: Optimize Time

Repeat
For each record begin
Let m be the number of expected locations in this record.
For $j := 1$ to m
Increment support of value(CE_j) by $m+1-j$.
end
Sort pages by support.
P := Page with highest support (break ties at random).
If (support (P) >= S_t) begin
Add <P, support (P)> to list of recommended pages.
For each record begin
For k: = 1 to n begins
If value (CE_k) = P
Set CE_k, CE_{k+1}, ..., CE_n to null;
End
End

2.2.2. Milestone coefficient

Milestone node is the geographical and indication node of entire website with features of high connectivity to other pages and high level of user preference.
Milestone coefficient, defines the importance of the nodes, expressed as
$\mathbf{M=R_c * W_c + R_d * Wd + R_{t(k)} * Wt}$
Where W_c stands for connectivity weight, W_d stands for depth weight and Wt stands for preference weight and $W_c + W_d + Wt = 1$
And $\mathbf{R_c}$, $\mathbf{R_d}$, $\mathbf{R_{t(k)}}$ is Relative connectivity, Relative depth, and Node preference respectively. These parameters require information related to the website structure.

Create the website structure

This is an important step which create the hierarchal (tree) structure of the website so that connectivity of each node can be calculated.

Relative connectivity

The in-degree of a node is the number of nodes coming to node in question while the out-

degree of a node is the number of nodes coming from node in question.

So the connectivity of a node will be represented by

C=I (in-degree) +O (out-degree) and

Relative connectivity is calculated as

Rc = C/Tc

Where Tc is the sum of connectivity of all nodes in a website.

Relative connectivity of the node is calculated for finding the relation among the nodes.

Relative depth

Once we have the tree structure of the website, depth level D can be easily calculated. Nodes at higher level are usually navigational pages with links to lower level nodes which usually consist of content or service information. So the **relative depth**, which can also be used to measure the importance of a node, is measured as:

Rd=1/D

Node preference

User preference is an important factor for analyzing of requirement. Degree of preference of a node, in terms of time duration, is measured as

T=Tj-Tj-1

Node preference is expressed as

Rt = T/Ta

Where T is visited duration of this node and Ta is the sum of all nodes visited duration.

3. Conclusion

The proposed algorithm works for both structured and unstructured website because timestamp is also taken into account to identify the content pages. The goal of optimize time algorithm is to minimize the number of backtracks the visitor has to make. While milestone coefficient defines the importance of a node according to website structure and used preferences in the above expression.

So the proposed algorithm is used to find out the node(s) with highest importance that should be located at a relatively prominent position, which can be used as reference coordinates by browsers.

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四川远古盆塞海嫘祖文明研究

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摘要：采用自然科学的部分方法研究人文科学，能把《山海经》看成是“涸海古卷”，并可通过对四川嘉陵江等流域发现的大围坪盆塞海海啸遗迹地貌和伴生的嫘祖文明遗存来考证。其意义不但能说明中华文明是“海洋文明在先，农耕文明在后”的文明，而且能进一步深入挖掘、利用四川及我国西部远古文明史资源，促进四川旅游和社会经济的跨越式发展。

【王德奎。**四川远古盆塞海嫘祖文明研究。**Academia Arena, 2011;3(8):7-13] (ISSN 1553-992X). http://www.sciencepub.net.

关键词：《山海经》；涸海古卷；四川嘉陵江；大围坪盆塞海海啸遗迹；地貌；嫘祖文明；四川

I. 前言概述

一、项目研究主要目标、主要内容、技术关键、技术路线和应用方案。

1、项目研究主要目标：梳理、整理改革开放近 30 年已取得的主要科研成果，扩大四川旅游业的国际国内游客吸引力，为建设可观感的“成都-绵阳史前文化公园”旅游带系列平台的规划、设计提供咨询或实际参与作贡献。

2、、主要内容：采用自然科学的部分方法研究人文科学，能把《山海经》看成是“涸海古卷”，并可通过对四川嘉陵江等流域发现的大围坪盆塞海海啸遗迹地貌和伴生的嫘祖文明遗存来考证。其意义不但能说明中华文明是“海洋文明在先，农耕文明在后”的文明，而且能进一步深入挖掘、利用四川及我国西部远古文明史资源，促进四川旅游和社会经济的跨越式发展。

3、技术关键：建立可观感的“成都-绵阳史前文化公园”旅游带平台，不但可以把整个四川远古史摇活，而且也可以把整个中国远古史也摇活；不但可以收中国人的钱，更重要的是可以收外国人的钱，扩大四川旅游业的国际国内游客吸引力，成为实现旅游业的招商引资的重要突破口和产业的转型更新，提升新的人气、商气、财气和经济增长点，才能真正把中华民族从“多难兴邦”到“科技兴国”完整历史体现出来，起到提升四川旅游和经济发展的现代化程度。

4、技术路线和应用方案：采用计量历史学或计量地质学的技术创新，如借助“遥感考古”、“ 喻传赞曲线”和青藏高原东缘南北向河流系统及其伴生古堰塞湖的野外考察，沉积、构造及年代学等研究方法，为“成都-绵阳史前文化公园”旅游带平台的建设提供规划、设计或咨询。

二、立项的必要性及国内外研究现状、发展趋势和知识产权状况分析。

1、立项的必要性及国内外研究现状：A、中华文明探源工程及四川三星堆-金沙遗址文明起源等国家级难题一直没有解决。B、除四川外，在全国还有 20 多处在争是嫘祖故里。这不是简单的争抢旅游资源，如能深入开展嫘祖文化研究，就能丰富中华文明史的内涵，说明历史上嫘祖真有其人，是历史上嫘祖巡行天下，传授种桑、养蚕之地的当地人，对她的功绩的纪念。C、1995 年，四川省科委批准立项《嫘祖文化与四川丝绸及国际国内旅游研究》。立项完成后，效果难彰显，其部分原因是后续立项工作没有跟上去。

2、发展趋势和知识产权状况分析：中华文明探源工程及四川三星堆-金沙遗址文明起源等国家级难题，即使中国历代领导人不能去解决，国外也有学者或团体去研究。这笔经历四代人近一百年研究到手的旅游资源知识产权，不能白白丢掉。说这笔经旅游资源的知识产权归属中国人，是它已经历四代人：

A、第一代是何拔儒和钟毓龙。

何拔儒（1862 年-1955 年），解放后任四川文史馆文史研究员。１９０３年至１９０６年在日本东京弘文师范学院留学。归国后至解放，一直关注盐亭县桦溪河两岸的大围坪地貌及天垣盘古王表碑的研究，在天垣场发动办起盘古戏楼兼学堂，向当地孩子传授“涸海古卷”知识。《嫘祖研究》一书主编之一的父亲，王治平先生就是其中的一个穷孩子，才使嫘祖研究薪火相继。

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塞海和大围坪地貌得名；以及与盐亭天垣“盘古王表”相似的“尧年王表”的来历。；

B、第二代是蒙文通和袁珂：蒙文通是四川大学历史教授，他伯父蒙公甫是何拔儒在家乡的好友，他们同中秀才，同补禀生。蒙文通受何拔儒发起的“存古学堂”基金的资助，了解何拔儒“涸海古卷”的理念；所以写出了汉潺亭在盐亭的《汉潺亭考》，和不遗余力宣讲《山海经》与巴蜀有关。袁珂是四川省社科院研究员，我国研究《山海经》古籍的著名权威。《山海经.海内经》载：“黄帝妻雷祖，生昌意”。 袁珂先生支持《嫘祖研究》一书主编之一的嫘祖研究，这是通过成都市文化馆老馆长王纯武先生联系认识袁珂先生的。

C、第三代是《嫘祖研究》一书的主编和《嫘祖文化与四川丝绸及国际国内旅游研究》课题的主研人员。

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三、项目的创新性。（理论创新、应用创新、技术创新、不超过 2000 字，各栏中不得出现申报单位名称和项目成员姓名。）

1、理论创新：把《山海经》看成类似“涸海古卷”而得以保存，这一方面强调了中华文明是“海洋文明在先，农耕文明在后”的文明，另一方面也强调了中华文明是属于人与自然及天下和谐持久双赢的文明。

2、应用创新：把《山海经》看成是《涸海古卷》，应用到在盐亭天垣盘垭村发现的盘古碑石及洪水朝天等传说和大围坪盆塞海海啸遗迹地貌的创世神似，那么和被称《死海古卷》的以色列《圣经·创世纪》结合，可看成是一个完整的全球历史演化序列，它说明人类和人类文明的起源有两个孵抱期：一是非洲到中东的地区，一是四川盆塞海及周边东南西北中的地区。人类的大迁徙，就在这两个方向有过多次的来回。这再应用到对中华文明探源工程、四川三星堆-金沙遗址文明起源上，都能给予合理的解释

3、技术创新：因鉴定大围坪盆塞海海啸遗迹地貌，要采用计量历史学或计量地质学的技术创新。如其中，a、中科院遥感所及挂靠该所的“遥感考古室”，答应给予帮助；b、云南大学的天文高能物理学家喻传赞教授，用高能实验测定湖泊沉积等材料，得出的我国近一万年间气候变化曲线的峰值图，给予了帮助；c、2008 年汶川地震发生后，温总理亲点将张岳桥研究团队，在岷江、青衣江、大渡河、白龙江等长江上游水系作野外考察。他们选取岷江上游、青衣江上游、大渡河上游 3 个古堰塞湖进行沉积、构造及年代学研究，结果发现岷江上游，在史前 7-1 万年（主湖期可能是 3~4 -1 万年）期间，存在一些长约 30Km，河道堵塞近 10 公里大型的堰塞湖，对比 5·12 大地震，其规模远远大于唐家山堰塞湖。更为有趣的是，这些堰塞湖在大约 1 万年左右全部溃坝了，其水量足以淹没整个四川盆地。这部分映证了何拔儒首创嫘祖历史的盆塞海猜想。

四、项目应用前景和产学研结合情况。（不超过 1000 字，各栏中不得出现申报单位名称和项目成员姓名。）

1、项目应用前景：

A、能为“成都-绵阳史前文化公园”旅游带平台的建设提供规划、设计或咨询。

B、能进一步深入挖掘、利用四川及我国西部远古文化史的旅游资源。

C、能整合三星堆-金沙遗址、九寨沟-黄龙寺原生态、阆中-雅安伏羲-女娲遗存、盐亭嫘祖-盘古遗存等线旅游，促进全省及地方的社会经济的跨越式发展。

2、产学研结合情况：

因该项课题是基于四川学人何拔儒首先把《山海经》看成是《涸海古卷》，并以盐亭县桦溪河两岸，距今 8000 年左右犹存的规模宏伟、气势壮观的山寨聚落遗址，以及围绕山寨的处于半山腰的大围坪，延伸数百里的地貌为具体考古平台，加之在桦溪河畔的盘垭村，天垣的盘古王表石龟碑以及盘母石等文物古迹作的计量历史学或计量地质学的基础，已经四代人近一百年的研究，而提出我国西部远古地震---堰塞湖---盆塞海---大围坪----海啸有关联的四川大围坪盆塞海海啸遗迹地貌论，所以应用广泛。

II. 详文

一、项目研究主要目标、主要内容、技术关键、技术路线和应用方案。

1、项目研究主要目标：梳理、整理改革开放近 30 年已取得的主要科研成果，扩大四川旅游业的国际国内游客吸引力，为建设可观感的“成都-绵阳史前文化公园”旅游带系列平台的规划、设计提供咨询或实际参与作贡献。

2、、主要内容：采用自然科学的部分方法研究人文科学，能把《山海经》看成是“涸海古卷”，并可通过对四川嘉陵江等流域发现的大围坪盆塞海海啸遗迹地貌和伴生的嫘祖文明遗存来考证。其意义不但能说明中华文明是“海洋文明在先，农耕文明在后”的文明，而且能进一步深入挖掘、利用四川及我国西部远古文明史资源，促进四川旅游和社

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上游、青衣江上游、大渡河上游 3 个古堰塞湖进行沉积、构造及年代学研究，结果发现岷江上游，在史前 7-1 万年（主湖期可能是 3~4 -1 万年）期间，存在一些长约 30Km，河道堵塞近 10 公里大型的堰塞湖，对比 5·12 大地震，其规模远远大于唐家山堰塞湖。更为有趣的是，这些堰塞湖在大约 1 万年左右全部溃坝了，其水量足以淹没整个四川盆地。这部分映证了何拔儒首创嫘祖历史的盆塞海猜想。

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C、能整合三星堆-金沙遗址、九寨沟-黄龙寺原生态、阆中-雅安伏羲-女娲遗存、盐亭嫘祖-盘古遗存等线旅游，促进全省及地方的社会经济的跨越式发展。

2、产学研结合情况：

因该项课题是基于四川学人何拔儒首先把《山海经》看成是《涸海古卷》，并以盐亭县桦溪河两岸，距今 8000 年左右犹存的规模宏伟、气势壮观的山寨聚落遗址，以及围绕山寨的处于半山腰的大围坪，延伸数百里的地貌为具体考古平台，加之在桦溪河畔的盘垭村，天垣的盘古王表石龟碑以及盘母石等文物古迹作的计量历史学或计量地质学的基础，已经四代人近一百年的研究，而提出我国西部远古地震---堰塞湖---盆塞海---大围坪----海啸有关联的四川大围坪盆塞海海啸遗迹地貌论，所以应用广泛。

五、项目实施的风险及对应策略。

1、项目实施的风险：

A、在实际操作中，研究人员的一些必要科研条件不能保证或不能具备。

B、实际研究得出的一些结论，在内部或在外部会引起争论。

C、建设可观感的“成都-绵阳史前文化公园”旅游带平台，由于各种因素，实际不能施工投产。

2、对应策略：

A、在科研经费有限的条件下，争取民间的资源的配合。

B、多听反对方的意见，取长补短，求得一致。

C、分步实施，先易后难，争取胜利。

六、已有研究，基础和承担优势。（包括与项目有关的前期研究状况、实验设备及设备条件、近三年主持或主研的科研成果；获奖及发表论文情况。

1、项目有关的前期研究状况、实验设备及设备条件：

四川远古盆塞海嫘祖文明及嫘祖文化研究，经历了三个历史阶段：第一阶段（1903 年—1990 年）：以四川学人何拔儒为代表，属于个人自觉自发的研究。

第二阶段（1991 年—1995 年）：由盐亭县人大、县政协、县委宣传部、县科协、县蚕业局、、县志办、县外事侨务旅游办等部门参加调查研究，1995 年，四川省科委批准立项《嫘祖文化与四川丝绸及国际国内旅游研究》。

第三阶段（1996 年至现在）：1998 年和 2000 年，四川省台办先后在盐亭和绵阳举办了首界及第二界海峡两岸嫘祖文化研讨会，2002 年，四川省人民政府在绵阳市召开了嫘祖文化与经济发展研讨会。目前盐亭嫘祖陵修复第一期工程早已竣工，盐蓬高等级公路（盐亭县到蓬溪县）盐亭县到金鸡镇段早已修通并通车；仅在盐亭就发现嫘祖文化遗址、文物、民间传说数以百计。2008 年 7 月 23 日，中华炎黄文化研究会向盐亭县委政府发函，明确将盐亭嫘祖故里命名为《嫘祖文化圣地》。2008 年 10 月 21 日，四川省人民政府旅游要闻公布了“打造古桑蚕文化旅游走廊”的规划方案。而在全国，研究嫘祖文化的地方有 20 多处，这些地方有嫘祖的传说和遗存或嫘祖庙。这是历史上嫘祖巡行天下，传授种桑、养蚕之地的当地人，对她的功绩的纪念，这能充分说明历史上嫘祖真有其人，开展嫘祖文化研究能使嫘祖文化内涵更加丰富。

2、近三年有关该项的科研成果；获奖及发表论文情况：

A、李海龙、张岳桥、李建华，青藏高原东缘南北向河流系统及其伴生古堰塞湖研究，《第四纪研究》杂志，2010 年第 4 期。

B、石云龙、石小玉，中华之母嫘祖，大众文化出版社，2009 年 2 月。

C、探索远古政权及政权人物现象，《教学与科技》学报，2007 年第 2 期。

七、项目的年度进度及预期目标。

1、项目的年度进度：

A、第一阶段（2011 年—2013 年），实地考察和调研可观感的“成都-绵阳史前文化公园”旅游带平台的情况，梳理、整理改革开放近 30 年已取得的文字、资料主要科研成果，写出综合性的专著，准备正式出版。

B、第二阶段（2013 年—2014 年），为建设可观感的“成都-绵阳史前文化公园”旅游带系列平台的规划、设计提供咨询或实际参与作贡献。

C、第三阶段（2014 年—2015 年），为建设可观感的“成都-绵阳史前文化公园”旅游带平台，协助

寻找资金和人力，促可观感旅游带平台尽早施工投产

2、预期目标：

有关的专著能出版面世，有特色的一至五个“史前文化公园”能建成和对外开放。

III. 再述

一、项目研究主要目标、主要内容、技术关键、技术路线和应用方案。

1、项目研究主要目标：梳理、整理改革开放近30年已取得的主要科研成果，扩大四川旅游业的国际国内游客吸引力，为建设可观感的“成都-绵阳史前文化公园”旅游带系列平台的规划、设计提供咨询或实际参与作贡献。

2、、主要内容：采用自然科学的部分方法研究人文科学，能把《山海经》看成是“涸海古卷”，并可通过对四川嘉陵江等流域发现的大围坪盆塞海海啸遗迹地貌和伴生的嫘祖文明遗存来考证。其意义不但能说明中华文明是“海洋文明在先，农耕文明在后”的文明，而且能进一步深入挖掘、利用四川及我国西部远古文明史资源，促进四川旅游和社会经济的跨越式发展。

3、技术关键：建立可观感的“成都-绵阳史前文化公园”旅游带平台，不但可以把整个四川远古史摇活，而且也可以把整个中国远古史也摇活；不但可以收中国人的钱，更重要的是可以收外国人的钱，扩大四川旅游业的国际国内游客吸引力，成为实现旅游业的招商引资的重要突破口和产业的转型更新，提升新的人气、商气、财气和经济增长点，才能真正把中华民族从“多难兴邦”到“科技兴国”完整历史体现出来，起到提升四川旅游和经济发展的现代化程度。

4、技术路线和应用方案：采用计量历史学或计量地质学的技术创新，如借助“遥感考古”、“ 喻传赞曲线”和青藏高原东缘南北向河流系统及其伴生古堰塞湖的野外考察，沉积、构造及年代学等研究方法，为“成都-绵阳史前文化公园”旅游带平台的建设提供规划、设计或咨询。

二、立项的必要性及国内外研究现状、发展趋势和知识产权状况分析。

1、立项的必要性及国内外研究现状：A、中华文明探源工程及四川三星堆-金沙遗址文明起源等国家级难题一直没有解决。B、除四川外，在全国还有20多处在争是嫘祖故里。这不是简单的争抢旅游资源，如能深入开展嫘祖文化研究，就能丰富中华文明史的内涵，说明历史上嫘祖真有其人，是历史上嫘祖巡行天下，传授种桑、养蚕之地的当地人，对她的功绩的纪念。C、1995年，四川省科委批准立项《嫘祖文化与四川丝绸及国际国内旅游研究》。立项完成后，效果难彰显，其部分原因是后续立项工作没有跟上去。

2、发展趋势和知识产权状况分析：中华文明探源工程及四川三星堆-金沙遗址文明起源等国家级难题，即使中国历代领导人不能去解决，国外也有学者或团体去研究。这笔经历四代人近一百年研究到手的旅游资源知识产权，不能白白丢掉。说这笔经旅游资源的知识产权归属中国人，是它已经历四代人：

A、第一代是何拔儒和钟毓龙。

何拔儒（1862年-1955年），解放后任四川文史馆文史研究员。１９０３年至１９０６年在日本东京弘文师范学院留学。归国后至解放，一直关注盐亭县桦溪河两岸的大围坪地貌及天垣盘古王表碑的研究，在天垣场发动办起盘古戏楼兼学堂，向当地孩子传授“涸海古卷”知识。《嫘祖研究》一书主编之一的父亲，王治平先生就是其中的一个穷孩子，才使嫘祖研究薪火相继。

钟毓龙（1880年-1970年），解放后任杭州市政协副主席。他是1936年出版的《上古神话演义》一书的作者。书中提出上古梁州在四川，梁州即以盆塞海和大围坪地貌得名；以及与盐亭天垣“盘古王表”相似的“尧年王表”的来历。；

B、第二代是蒙文通和袁珂：蒙文通是四川大学历史教授，他伯父蒙公甫是何拔儒在家乡的好友，他们同中秀才，同补禀生。蒙文通受何拔儒发起的“存古学堂”基金的资助，了解何拔儒“涸海古卷”的理念；所以写出了汉潺亭在盐亭的《汉潺亭考》，和不遗余力宣讲《山海经》与巴蜀有关。袁珂是四川省社科院研究员，我国研究《山海经》古籍的著名权威。《山海经.海内经》载：“黄帝妻雷祖，生昌意”。 袁珂先生支持《嫘祖研究》一书主编之一的嫘祖研究，这是通过成都市文化馆老馆长王纯武先生联系认识袁珂先生的。

C、第三代是《嫘祖研究》一书的主编和《嫘祖文化与四川丝绸及国际国内旅游研究》课题的主研人员。

D、第四代是今天盐亭的县长赖俊同志和盐亭县科协主席胡彬同志。赖俊同志1988年兰州大学历史系毕业，分配到《绵阳日报》工作，就编辑发表了《上古黄河曾流入四川》的投稿。胡彬同志曾是盐亭县旅游局副主任，至始至终是嫘祖陵工程的现场负责人。他们是众多嫘祖文化旅游第四代人的代表。

三、项目的创新性。

1、理论创新：把《山海经》看成类似“涸海古卷”而得以保存，这一方面强调了中华文明是“海洋文明在先，农耕文明在后”的文明，另一方面也强调了中华文明是属于人与自然及天下和谐持久双赢的文明。

2、应用创新：把《山海经》看成是《涸海古卷》，应用到在盐亭天垣盘垭村发现的盘古碑石及洪水朝天等传说和大围坪盆塞海海啸遗迹地貌的创世神似，那么和被称《死海古卷》的以色列《圣经·创世纪》结合，可看成是一个完整的全球历史演化序列，它说明人类和人类文明的起源有两个孵抱期：一是非洲到中东的地区，一是四川盆塞海及周边东南西北中的地区。人类的大迁徙，就在这两个方向有过多次的来回。这再应用到对中华文明探源工程、四川三星堆-金沙遗址文明起源上，都能给予合理的解释

3、技术创新：因鉴定大围坪盆塞海海啸遗迹地貌，要采用计量历史学或计量地质学的技术创新。如其中，a、中科院遥感所及挂靠该所的“遥感考古室”，答应给予帮助；b、云南大学的天文高能物理学家喻传赞教授，用高能实验测定湖泊沉积等材料，得出的我国近一万年间气候变化曲线的峰值图，给予了帮助；c、2008 年汶川地震发生后，温总理亲点将张岳桥研究团队，在岷江、青衣江、大渡河、白龙江等长江上游水系作野外考察。他们选取岷江上游、青衣江上游、大渡河上游 3 个古堰塞湖进行沉积、构造及年代学研究，结果发现岷江上游，在史前 7-1 万年（主湖期可能是 3~4 -1 万年）期间，存在一些长约 30Km，河道堵塞近 10 公里大型的堰塞湖，对比 5·12 大地震，其规模远远大于唐家山堰塞湖。更为有趣的是，这些堰塞湖在大约 1 万年左右全部溃坝了，其水量足以淹没整个四川盆地。这部分映证了何拔儒首创嫘祖历史的盆塞海猜想。

四、项目应用前景和产学研结合情况。

1、项目应用前景：

A、能为“成都-绵阳史前文化公园”旅游带平台的建设提供规划、设计或咨询。

B、能进一步深入挖掘、利用四川及我国西部远古文化史的旅游资源。

C、能整合三星堆-金沙遗址、九寨沟-黄龙寺原生态、阆中-雅安伏羲-女娲遗存、盐亭嫘祖-盘古遗存等线旅游，促进全省及地方的社会经济的跨越式发展。

2、产学研结合情况：

因该项课题是基于四川学人何拔儒首先把《山海经》看成是《涸海古卷》，并以盐亭县桦溪河两岸，距今 8000 年左右犹存的规模宏伟、气势壮观的山寨聚落遗址，以及围绕山寨的处于半山腰的大围坪，延伸数百里的地貌为具体考古平台，加之在桦溪河畔的盘垭村，天垣的盘古王表石龟碑以及盘母石等文物古迹作的计量历史学或计量地质学的基础，已经四代人近一百年的研究，而提出我国西部远古地震---堰塞湖---盆塞海---大围坪----海啸有关联的四川大围坪盆塞海海啸遗迹地貌论，所以应用广泛。

五、项目实施的风险及应对策略。

1、项目实施的风险：

A、在实际操作中，研究人员的一些必要科研条件不能保证或不能具备。

B、实际研究得出的一些结论，在内部或在外部会引起争论。

C、建设可观感的“成都-绵阳史前文化公园”旅游带平台，由于各种因素，实际不能施工投产。

2、对应策略：

A、在科研经费有限的条件下，争取民间的资源的配合。

B、多听反对方的意见，取长补短，求得一致。

C、分步实施，先易后难，争取胜利。

六、已有研究基础和承担优势

1、项目有关的前期研究状况、实验设备及设备条件：

四川远古盆塞海嫘祖文明及嫘祖文化研究，经历了三个历史阶段：第一阶段（1903 年—1990 年）：以四川学人何拔儒为代表，属于个人自觉自发的研究。

第二阶段（1991 年—1995 年）：由盐亭县人大、县政协、县委宣传部、县科协、县蚕业局、、县志办、县外事侨务旅游办等部门参加调查研究，1995 年，四川省科委批准立项《嫘祖文化与四川丝绸及国际国内旅游研究》。

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B、石云龙、石小玉，中华之母嫘祖，大众文化出版社，2009 年 2 月。

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7/8/2011

B、第二阶段（2013 年—2014 年），为建设可观感的“成都-绵阳史前文化公园”旅游带系列平台的规划、设计提供咨询或实际参与作贡献。

C、第三阶段（2014 年—2015 年），为建设可观感的“成都-绵阳史前文化公园”旅游带平台，协助寻找资金和人力，促可观感旅游带平台尽早施工投产

2、预期目标：

有关的专著能出版面世，有特色的一至五个“史前文化公园”能建成和对外开放。

参考文献

略

A comparative study on instances of malaria in four different ecological zone of district Hardwar of Uttarakhand state (India)

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Abstract: The present study was conducted to find out the instances of malaria in four different ecological zones in district Haridwar during the year of 2008. The malarial instances were also correlated with climatic factors. Four different ecological zones i.e. (i) Industrial Ecological Zone (Township of BHEL), (ii) Urban Ecological Zone (Township of Roorkee), (iii) Pre-urban Ecological Zone (Township of Laksar), (iv) Rural Ecological Zone (Bahadarabad village) were selected for the present study.
[Pankaj Saini[1], Bishambhar D.Joshi[2] and Trilochan Sharma. A comparative study on instances of malaria in four different ecological zone of district Hardwar of Uttarakhand state (India). Academia Arena, 2011;3(8):14-17] (ISSN 1553-992X). http://www.sciencepub.net.

Keywords: Malaria, Environmental Zone, Correlation,

1. Introduction:

Human beings have long been living with malaria. As far back as 2700 BC, medical writing in India and China allude to what is likely malaria, and the disease is also described in the writings of Homer **(Heggenhougen *et al.*, 2003).** In one of the four Vedas of the Hindus, malaria is referred as "a disease most dreaded affliction, king of disease." While Chinese referred to the disease as "Mother of Fevers." The relationship of fever to swamps and low-lying water was also recognized by the Greeks in the sixth century **(Sharma *et al.*, 1996).**

Malaria has been a major public health problem in our country even though modern medical science has reached its peak. Except for areas situated 5000 ft. above sea level malaria is endemic all over India. The endemicity varies from place to place depending on survival condition of malaria vector as well as its longevity **(Saini *et al.*, 2010)**

The most prevalent parasite is *Plasmodium vivax* (65%) followed by *P. falciparum* (35%), while *P. malariae* cases are only a few thousands, recorded from some foot hill areas in Orissa state. Occurrence of *Plasmodium ovale*, the forth malaria parasite species, has not been very common in India and till date only three reports of *P. ovale* are available from Kolkata, Orissa and more recently from Delhi. Among the four parasites found in India, *P. falciparum* is the most dangerous. It may cause serious illness and death, diagnosis is often difficult and almost all deaths due to malaria are caused by *P. falciparum*. This parasite has also become resistant to chloroquine and resistance to long acting sulpha drugs has also been reported. *Plasmodium vivax* also produces serious illness but death is very rare **(Prakash *et al.*, 2003).**

In India, occurrences of epidemics and focal outbreaks have worsen the malaria situation. During the first half of the twentieth century, malaria has affected every walk of life so much that became one of the major problem before developing countries. According to an estimate in 1935, out of 100 million malarial cases, one million deaths occurred in Indian subcontinent. Another estimate in 1947 about 75 million cases of malaria (21.8% population) were found and 8, 00,000 deaths. It is notable to mention that India's malaria situation is very important in the world scenario as the peak of malaria cases in India in 1976, was also a peak year at global level **(WHO, 1990).** India had an estimated 10.6 million cases in 2006 that account for approximately 60% of cases in the whole of the South-East Asia Region. The states most affected with this epidemic are Uttar Pradesh, Bihar, Karnataka, Orissa, Rajasthan, Madhya Pradesh and Pondichery **(WHO, 2008).**

Over the last one decade the land use and related environmental scenario of district Haridwar has drastically changed due to growth and development projects including growing urbanization and floating population. In the North India, the main vectors of malaria are *Anopheles culicifacies and A. stephensi, A. fluviatilis* **(Saini *et al.*, 2009).** The permanent changes in local malaria endemicity are always due to man-made environmental changes in the areas. Some times the problem arises up to the extant, which takes the

shape of epidemic. Entomological, parasitological, clinical related issues are looked into to bring down the morbidities and loss to human lives.

A true epidemiological picture of malaria instances is required for planning and execution of its control operation and to obtain feed-back of effect of intervention methods. Therefore, the true instance of disease is important for:

- **The success of control operations.**
- **In corporating timely corrective measures.**
- **Tackling the epidemics.**

2. Materials & Methods:

Study area: The area of present study is spread with in the district Haridwar, situated between latitudes 29^0 45' – 29^0 58' N and longitudes 77^0 52' – 78^0 75' E. The area of the district is 2360 sq Km. Haridwar district is located in Garhwal Region of Uttarakhand state in India. Population and its density is 14,44,213 and 612 per sq Km, respectively **(as per 2001 census).**

Spots for survey: In the present study, a total of four different ecological zones were selected to find out the burden of malaria in the community of Haridwar district of Uttarakhand (India). The malarial instances were also correlated with age, sex, economic status, religion of people and climatic factors. Four different ecological zones i.e. **(i) IEZ** (Township of BHEL), **(ii) UEZ** (Township of Roorkee), **(iii) PUEZ** (Township of Laksar), **(iv) REZ** (Bahadarabad village) were selected for the present study.

2.1 Methods for field work:

To assess the burden of malaria in community of different ecological zones, survey method was used, which was conducted during 2008, through consulting local medical practitioners, hospitals, nursing homes, pathologist of selected ecological zones in Haridwar district. In each ecological zone, randomly selected households were also surveyed to find out the infected patients of malaria and method of prevention and treatment at house level. Head of the household was the first choice as
respondent. In his/ her absence a person above 18 years of age was taken as respondent and the relevant details were filled up. The residential areas of these reported patients were also surveyed to find out the sanitation condition in their living areas.

2.2 Methods of analysis:

This study is based on the survey which was conducted during 2008. The data were analyzed for correlation with key factor(s) like socio-economic and environmental conditions etc. The data were also analyzed for Annual Blood Smear Examination Rate (ABER), Slide Positivity Rate (SPR), Slide falciparum Rate (SfR), Annual Parasite Incidence (API) and data was also statistically analyzed for Coefficient of correlation (r-value) using standard statistical methods **(Sharma *et al.*, 1996, Mather, 1973, Bailey, 1995).**

3. Results:

In the present study, maximum (231) and minimum (71) instances of malaria were found from PUEZ and IEZ, respectively. Out of 518 malaria patients found from these four different ecological zones of district Haridwar, 65 patients were found infected by *P. falciparum(Pf),* while rest 453 patients were found infected by *P. vivax (Pv).* It was also observed that about 66 % of malarial patients in selected Ecological zones of Haridwar district belonged to below poverty line (BPL) category. The distribution of malaria patients and correlation to environmental condition are depicted in Table 1and 2. In the present investigation relatively fewer cases were found in winter season and maximum cases of malaria were recorded during monsoon and post-monsoon months of the year. During the study period of 2008, the values of correlation (r) showed that overall total correlation of total instances of malaria with average temperature was found to be moderately and positively significant (r = +0.53 to 0.65). The overall total correlation of total instances of malaria with average humidity was found to be slightly positive significant (r = +0.24 to + 0.43). The overall total instances of malaria was observed to be highly and positively significantly correlated to monthly total rainfall (r = +0.76 to +0.88) (Table 2).

Table 1: Instances of malaria infection in selected ecological zones of Haridwar district, during the study period of 2008

Study area	No. of the patients (malaria + ve)							
	2008							
	Total Blood Slide	No. of malaria +ve	*Pv*	*Pf*	SPR	SfR	ABER	API
IEZ	1059	71	64	7	6.7	0.6	2.2	1.4
UEZ	1650	91	79	12	5.5	0.7	1.6	0.9
PUEZ	1920	231	204	27	12.0	1.4	8.9	10.8
REZ	1532	125	106	19	8.1	1.2	16.3	13.3
Grand Total	6161	518	453	65	-	-	-	-

IEZ = Industrial Ecological Zone **U EZ = Urban Ecological Zone**
PUEZ = Pre-urban Ecological Zone **REZ = Rural Ecological Zone**

Table 2: Coefficient of correlation (r- value) between instances of malaria and environmental factors during the year 2008

Environmental Factors	(r-values)			
	No. of Instances (malaria + ve)			
	IEZ	UEZ	PUEZ	REZ
Temperature	+0.53	+0.64	+0.65	+0.62
Humidity	+0.43	+0.31	+0.24	+0.29
Rainfall	+0.76	+0.88	+0.86	+0.79

4. Discussion:

During the present study, the association between monthly rainfall and instances of malaria was found greater than that for between temperature and malarial instances. This apparently is indicative of that humidity caused due to rainfall play an important role in the growth and transmission of disease than ambient temperature, as has been postulated by few earlier workers from different places. But it was also observed that proper management can fight against this dominant favorable factor of malarial infection. This can be easily explained in case of IEZ where a well managed plan is in good functional condition rain water harvesting and drainage. The management of BHEL is working in collaboration of National Institute of Malaria Research (NIMR) to control malaria on a large scale since 1986. This necessarily warrants a status of good health for the whole population of the industrial area, otherwise a discared population will hit hard and impact severely to the productivity of the industry and in long term shall prove far costlier to the industrial management. On the other hand, In PUEZ and REZ area of higher instances is a low-lying area and many breeding sites of mosquitoes were spread with stagnant water holes in and around this zone. On account of this, the man – mosquitoes contact reaches at higher level, increasing the instances of malarial infection. The present findings are in accordance with the studies of **Lieshout,*et al,* (2004)** and **Tyagi, *et al,* (2005),** in which the climatic condition and socio-economic status were found most important factors in malaria infection. It was observed that about 66% of malarial patients were

from Low Income Group (LIG) and most of them were residents of slum localities in different environmental zones of Haridwar district.

It would be appropriate to emphasized that there is no single solution to malaria problem but awareness play key role in the field of malaria control. Because of this, the awareness programme on a mass scale should be encouraged. A team comprising of professional workers, social scientists & administrators may be entrusted with the task of evolving an effective method of combating malaria from all sides and at every level. If worked sincerely such a team is sure to provide healthy results. However, the most desirable participation and contribution would be from the general population. There is strong need to change the mind set of the people to follow the norms about health hygiene, sanitation, cleanliness, and environmental ethics and using natural resources in such a way which may help in eradication of mosquitoes and the diseases like malaria.

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Indication Of High Frequency Structures Using Derivative Filters Over Koton Karifi Area, Nigeria, Modelled From Aeromagnetic Data

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Abstract: An aeromagnetic map of the Koton-karifi area, (sheet 227) was purchased from the Geological survey of Nigeria (GSN).The area is located between latitudes 8°.00'N and 8°.30'N and longitudes 6°.30'E and 7°.00'E.Six profiles were established. The map was digitised with a spacing of 1KM.The anomaly map with values ranging from -200nT to 250nT, Shows a central linear belt which runs from the western to the eastern ends. The southern end is dominated by convolutions and the Northern end is dominated by smoothed network of contours. The derivative filters were designed and used to quantify the spatial rate of the magnetic field in vertical and horizontal directions and so capable of enhancing higher frequency anomalies relative to the lower ones.

[Abdulsalam N. Nasir, Mallam Abu, Likkason K. Othniel. **Indication Of High Frequency Structures Using Derivative Filters Over Koton Karifi Area, Nigeria, Modelled From Aeromagnetic Data**。 Academia Arena, 2011;3(8):18-25] (ISSN 1553-992X). http://www.sciencepub.net.

Key words: Derivative filters, vertical directions, horizontal directions, high- frequency, convolutions.

1. Introduction

The aim of a magnetic survey is to investigate subsurface geology on the basis of magnetic anomalies in the Earth's magnetic field resulting from the magnetic properties of the underlying rocks. Magnetic surveys can be performed on land, at sea and in air. The speed of operation and cost make airborne magnetic surveys very attractive, where the principal objective has been to assist in mineral and groundwater development through improved geologic mapping. In addition, aeromagnetic surveys have traditionally been applied at the early stage of petroleum exploration to determine depth and major structure of crystalline basement rocks underlying sedimentary basins. The methodology for acquiring and compiling data appears to be keeping pace with modern technology so that presently the magnetic method is by far the most widely used of all geophysical survey; both in terms of line-kilometres surveyed annually and in total line-kilometres (Paterson and Reeves, 1985). Thus compared to other geophysical methods, the aeromagnetic data are always readily available and so it is important to exploit the potentialities of these data. This has been the aim of this work. This paper focuses on the analyis of a total-field aeromagnetic data using derivative filters over the Koton Karifi area, central Nigeria. The outcome of the analysis is expected to throw more light on the geology and other linear features of the area.

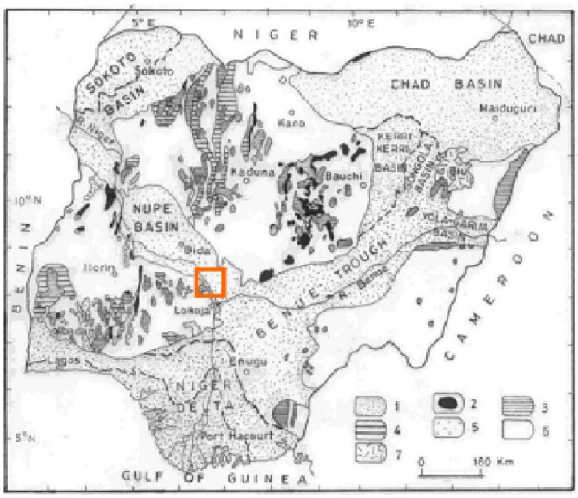


Fig. 1.0 Geological map of Nigeria

1 = Cretaceous-Recent sediments; ***2***=Younger Granites; ***3*** = Older Granites; ***4*** = Undifferentiated Metasediments; ***5*** = quartzite and quartzite schist; ***6*** = Undifferentiated basement complex and ***7*** = Tertiary volcanics (From Geological map of Nigeria 1994: compiled by the Geological Survey of Nigeria). Inset is the study area: the Koton Karifi Area of the Nupe Basin, Nigeria.

2. Geology of the Koton Karifi Area

The Koton-karifi area of Nigeria (Figs. 1.1 & 1.2) is part of the entire Nupe basin, Nigeria and is the SE edge of this basin lying between latitudes

8^0:00'N and 8^0:30'N and longitudes 6^0:30'E and 7^0:00'E.

This trough is filled with Upper Cretaceous sediments and is mainly occupied by the sandstones. The original rock of the area could have been subjected to considerable erosion before the Upper Cretaceous beds were laid down. The sandstones consist of unfossiliferous shallow water sandstones and pebble beds. It is possible that these sandstones could have covered a larger area (continuous to the Sokoto Basin) than now (Russ, 1957). Tertiary earth movements could have impacted low dips to this formation leading to erosion over wider areas. The youngest rocks of the area are laterites and alluvial, terrace and terrestrial deposits of tertiary and recent age (Russ, 1957).

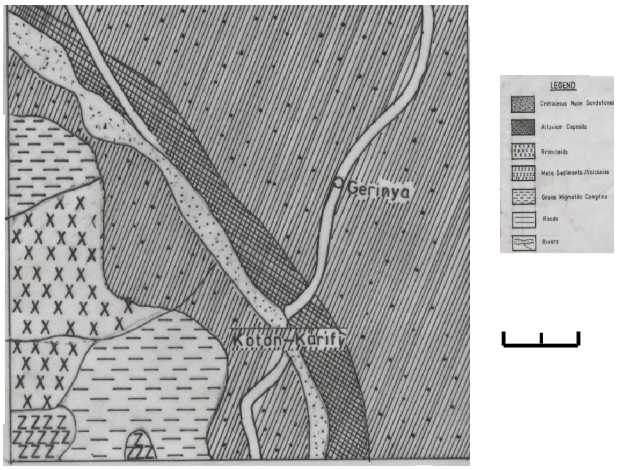


FIG: 1.0 Geology map of Koton – Karifi (From Geological) Map of Nigeria 1994

The general stratigraphy and sedimentation processes consist of the lithologies overlying the Precambrian Basement complex. The sequence is divided into a number of formations and lithologies characteristics of the age group. The Precambrian to probably Palaeozoic rocks are the oldest rocks and form the basement complex (Adeleye, 1976). During the upper cretaceous times, depositional cycle started with overlying of the Nupe Group (undifferentiated sandstones) in the Santonian. Adeleye (1976) gave the remaining sedimentary succession as follows. Sandstone formations of Bida and Lokoja followed in succession up to the end of Santonian. During this period, there were no severe crustal movements to alter the geometry of the layers at the end of each depositional cycle. Thus these formations overlie conformably on one another. At the beginning of the Maastrichtian, the Agbaja (around Niger/Benue confluence) and Batati (around Bida) formations were deposited conformably over the Mamu formation. The Agbaja and Batati formations comprise ironstones of the minnette-type of iron ores (Adeleye, 1976). These ironstones have identical properties to the iron ores of minnette-type of Europe and America, which contain 1.3 – 0.8% phosphorus, small percentage of alumina, sulphur and silica (Adeleye, 1976). The depositional sequence is followed by Ajali sandstones and the coal seams and sandstones making the Nsukka formation. The Quarternary deposits are the recent alluvium, laterites, terrace and terrestrial gravels and sands (Russ, 1957).

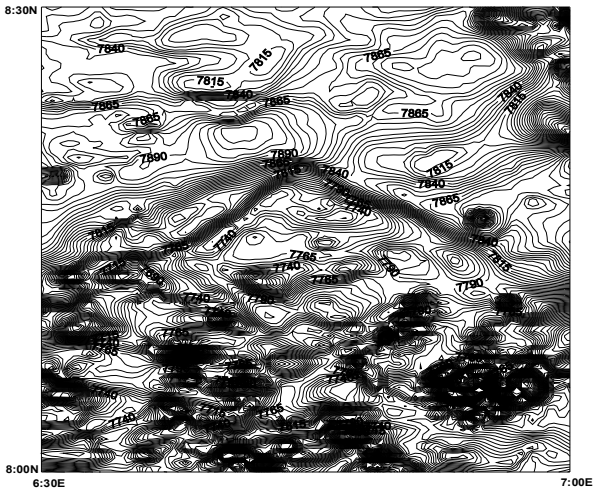
The sedimentary facies of the area and the description of the major formational lithologies and structural expositions of the area have been given by Adeleye (1976), as a gently down-warped trough whose buried Basement Complex has a high relief with sedimentary formations of more than 300m thick. The epeirogenesis responsible for the basin genesis seems closely connected with crustal movements of the Santonian orogeny of South-eastern Nigeria and the nearby Benue Valley (Adeleye, 1976). The earlier periods of sedimentation and instrusion in the Precambrian represent a complex vast period of history in the area (Russ, 1957). These earlier sediments and some minor intrusion must have been subjected to several periods of metamorphism.

3. Materials and Methods

Total field aeromagnetic anomaly data obtained for the Koton-Karifi area, Nigeria were used for the present study. The original data were part of the aeromagnetic map of the total magnetic field intensity in half-degree sheet acquired from the Nigeria Geological Survey Agency (NGSA). These surveys were conducted by consultants on behalf of NGSA between 1974 and 1976 covering nearly the entire country. The main aim of these surveys was to assist in mineral and ground water development through improved geological mapping. Flight line direction was NNW-SSE at profile spacing of 2km and flight line spacing of 20km at an altitude of about 152 m. The lines were flown in an ENE-WEW (N60E).

The first step in the present analysis was to digitize the map covering the survey area with a digitizing space of 1km. Digitizing was done manually, reading values at intersections of north-south and east-west profiles. The next step was to recontour the map to check for any misreading and to produce the total – field aeromagnetic intensity map (Fig. 2a). The contouring was done using the Golden Software 2D Surface Mapping Program (Surfer

Version 7.0). The main corrections applied during post-processing of the total-field aeromagnetic intensity for this area were diurnal correction, estimation of regional correction from component gradients and crossover tie leveling (Luyendyk 1998). The resulting anomaly map for the study area, after the International Geomagnetic Reference Field (epoch 1 January 1974, using IGRF 1975 model [Cain 1968]) removal, is displayed in Figure 2b. The map (Fig. 2b) shows values ranging from –200 to 250 nT. The map shows a central linear belt which runs from the western to the eastern ends and apparently separating the area into two: with the southern dominated by convolutions and the northern dominated by smoothed network of contours. This prominent belt is likely very significant in the area and will be further investigated.



Total Field Aeromagnetic Map (Sheet 227) of Koton Karifi. Contour interval is 5 nT. Actual values are obtained by adding 25000 nT to contour values. Regional correction based on IGRF (epoch date 1st January 1974) has not been made.

FIG: 2a

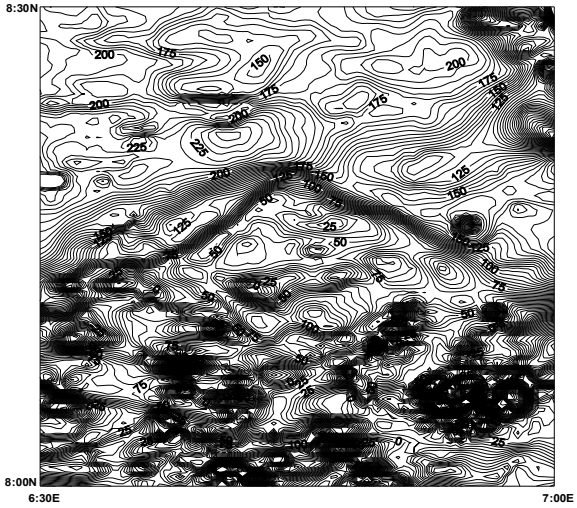


FIG: 2b Total field aeromagnetic anomaly map of koton- karifi area(sheet 227). The main field in form of igrf (igrf model 1975 of epoch date 1 jannuary 1974) has been removed. Contour interval is 5nT.

4. Theory of Vertical Derivative Filters

First and second vertical derivatives emphasize shallower anomalies and can be calculated either in the space or frequency domains. These operators also amplify high-frequency noise, and special tapering of the frequency response is usually applied to control this problem. Derivatives quantify the spatial rate of change of the magnetic field in vertical and horizontal directions.

The expression for the magnetic force $\vec{F}(r)$ is obtained from Coulomb's law for magnetic poles m_1 and m_2 separated by a distance r as

$$\vec{F}(r) = \frac{m_1 m_2}{\mu r^2}\vec{r} \qquad (1.0)$$

The poles are somewhat of a fiction, since they cannot exist isolated, but only in pairs: if we assume two very long bar magnets with two poles close together and the other two apart, the situation is fulfilled in practise. The value μ is the permeability of the medium surrounding the magnets and is dimensionless.

The magnetic field strength $\vec{H}(r)$ is expressed as

$$\vec{H}(r) = (F\vec{}(r)) / m' = \left(\frac{m}{\mu r^2}\right)\vec{r} \qquad (1.1)$$

And the magnetic induction $\vec{B}(r) = \mu\vec{H}(r)$.

The magnetic field vector $\vec{B}(r)$ can be derived from a scalar potential function A (r) as

$$\vec{B}(r) = -\vec{\nabla}A(r) \qquad (1.2)$$

This potential may be defined as the work done in moving a unit pole against the magnetic field as

$$A(r) = -\int_{\infty}^{r} \vec{B}(r).\vec{dr} = m/\mu r \qquad (1.3)$$

Though a single magnetic pole is a pure fiction, the scalar potential is somewhat complex and more details can be found from Telford et al. (1990).

The first and second vertical component of the field $\vec{B}$ are the derivatives of the potential in the direction of the vertical axis. They are respectively $\frac{\partial B}{\partial z} = -\frac{\partial^2 A}{\partial z^2}$ and $\frac{\partial^2 B}{\partial z^2} = -\frac{\partial^3 A}{\partial z^3}$. Note that the magnetic potential A, like gravity potential satisfies the Laplace's equation: $\nabla^2 A = 0$ for a homogeneous region outside the volume V of the magnetic body. Similarly the magnetic potential everywhere within a

region containing magnetic material satisfies the Poisson equation $\nabla^2 A = 4\pi\vec{\nabla}.\vec{M}(r)$, where the magnetic body is a continuous distribution of dipoles resulting in a vector dipole moment per unit volume, $\vec{M}(r)$.

Many modern methods for edge detection and depth-to-source estimation rely on horizontal and vertical derivatives (Nabighian et al. 2005). Derivatives essentially enhance high frequency anomalies relative to low frequency anomalies; the derivative maps however, cannot be interpreted quantitatively but are only useful as enhancement tools for high-frequency structures.

5. Results and Discussion

The residual anomaly over this area was subjected to first and second vertical derivative filters. The results are displayed in Figures 3.0 and 3.1 respectively. Figures 3.0 and 3.1 show contour values ranging from -70000nT/km to 60000nT/km and -24000000nT/km to 19980000nT/km respectively. Numerous convolutions are observed in the southern ends (Figs. 3.0 & 3.1) indicating enhancement of high-frequency structures and/or noise. Generally, vertical and horizontal derivatives quantify the spatial rate of the magnetic field in vertical and horizontal directions and so derivatives enhance high frequency anomalies relative to low frequencies.

The FFTFIL (Hildenbrand 1983) was used to accomplish these computations.

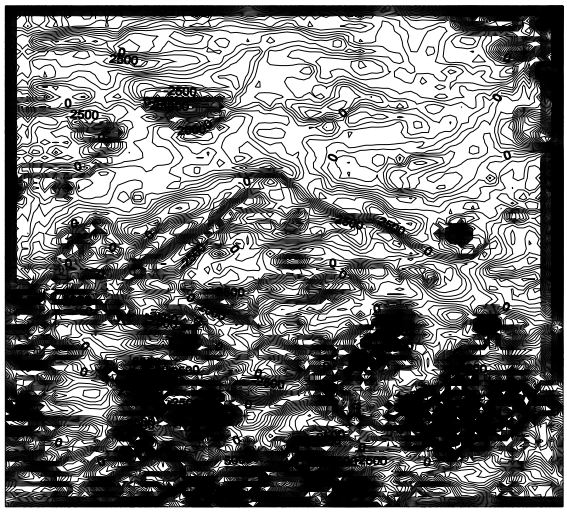


Fig. 3.1: The total field magnetic anomaly map of Koton Karifi area subjected to first vertical derivatives.
(Contour interval is 5nT)

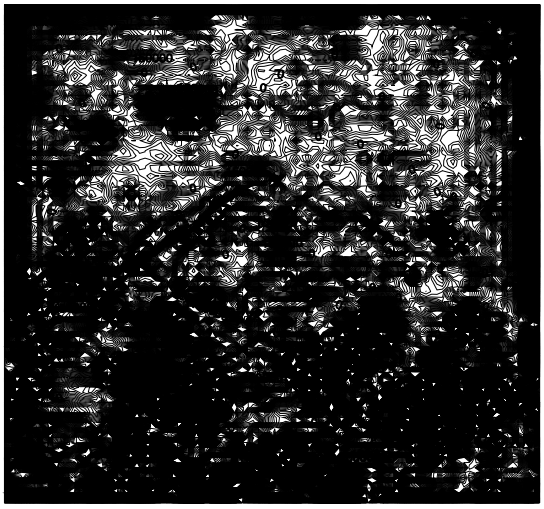


Fig. 3.0: The total field magnetic anomaly map of Koton Karifi area subjected to first vertical derivatives.
(Contour interval is 5nT)

6. Conclusion

The aeromagnetic anomaly data over Koton-Karifi area, Nigeria after the IGRF removal was subjected to map analyses using derivative filters. Derivative filters involved the use of first and second derivatives filters. These are enhancement filters and application gives a new unit to the data (either nT/km or nT/km2). However, the analyses results indicate that high- frequency structures or noise may have been enhanced (Figs. 3.0 & 3.1) and hidden features were better highlighted. These features may help much in forward or inverse modelling of the field in this area. The present study did not consider the interactive modelling of the magnetic data.

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评庞小峰的非线性量子力学

----21 世纪新弦学概论（7）

林云璀

摘要：《非线性量子力学》论述非常清晰：为创立非线性量子力学，庞小峰大有扳倒薛定谔之势，但全书读来却峰回路转，为实实在在发展量子力学树立了好榜样。

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关键词：非线性 薛定谔方程 孤子演示链

一、非线性量子力学的模具之争

笔者与庞小峰先生交往，是从 1982 年看到《自然杂志》第四期发表他的《宏观量子效应》之后开始的，现在还保留着他的三封回信。2011 年 4 月 2 日他的一封回信说：“关于你送我的孤子演示链放在那里也没有时间去研究，不好作为一种模型去解决一些问题。请原谅！”可证我们之间已经有 30 年业余与专业交往的情结。这里的非线性量子力学模具之争，不是我们和庞小峰教授的争论，而是我们吸取他的《非线性量子力学》一书中的一些营养，对量子力学及非线性量子力学使用的模具，作一些讨论。周凌云博士曾发表文章评庞小峰的非线性量子力学理论，称之为“天府之国的一支奇葩”，是当之无愧。

如果说普通的老百姓，业余都去看量子力学会致富，那是疯子。但确有人说，在今日一些自诩为物理理论的精英人群，认为数学是物理理论的最高形式，其它形式都是低级形式，他们并不关心说的东西是否真正存在，这难道是要使物理理论成为既不同于宗教，又不同于自然真理的新宗教、新圣经？这就可得到崇拜者的敬仰和源源不断提供的俸禄？这就可对后来人进行愚弄？难道各个国家花费大量资金，就是为造就这几个新教主？有人又说，弦论=胡扯+八道；物理学从爱因斯坦开始，越来越向玄的方向发展；物理学家习惯从数学出发去解释物理现象，发展到登峰造极的就是弦论，这使人们的视线偏离了正确的方向。因为无论是专业人员，还是业余人员，顶尖高手都把自然界的核心秘密锁定在空间的本质上，才能解释一切物理现象。弦论认为空间加时间是 11 维，目的是让人看不懂，认为只有这样才是物理大师。弦论把简单的搞得太复杂了，深奥的搞得太肤浅了，以为普通的人真好骗。说这类话的同志，如果知晓庞小峰的成长和他的《非线性量子力学》，会知道自己说错了。

当然庞小峰先生也不好接触，但这要分情况。业余与专业的成长十分不同。如果把量子力学之难类比玄学、神学，也不为过。但它绝对不是玄学、神学那类没有给出相互作用数学和计算及实验证实的东西。因出生在偏僻农村，解放初看病还普遍是中医，发现农村孺幼皆知一点中医的“阴阳五行，相生相克”的知识，有的还含一点巫术迷信。1958 年大跃进县里各区办中学，我们得以读上初中。一次劳动中因问一位从重庆师专远道分来的物理老师：“阴阳五行，相生相克是否属于神学？”这位物理老师一时兴起说：“物理学分为四大力学：理论力学、热力学、电动力学、量子力学。中医不是神学，它的阴阳五行，相生相克学说就类似当代的量子力学。你们初中才学的物理学，只算理论力学，而量子力学是太难学了”。

老师的话映像在我们的少年心灵，也许才喜欢上量子力学；这纯属偶然。但其目标不是为当理论物理学家，而是想把量子力学之难，变得要像中医“阴阳五行，相生相克”一样孺幼皆知，即使拿到贫穷偏僻地方，也能给普通老百姓一点实际的兴趣。就这样在上世纪数十年社会风云变幻中，我们仍走上了业余自学跋涉量子力学的不归之路。慢慢地发现量子力学就类似古代的宫廷音乐，它有类似固定的词牌、曲调，然后你可以填词演唱。这里曲调就类似相互作用的数学型式和计算，填词就类似物理模型或模具。这也和四川农村的一些古老的民歌相似。而微观物理模具不同于宏观物理模具，是它们始终只是微观粒子特征的一些模拟。

带着这种眼光，在上世纪六十、七十年代初，我们找到两种模具：线性的称为“类圈体”；非线性的称为“孤子演示链”。所谓的线性：从相互关

联的两个角度来界定，其一：叠加原理成立；其二：物理变量间的函数关系是直线，变量间的变化率是恒量。对非线性界定，其一叠加原理不成立必将导致其二物理变量关系不对称；反之，如果物理变量关系不对称，那么叠加原理将不成立。联系薛定谔（Schrodinger）方程，这里是将物质波的概念和波动方程相结合建立的二阶偏微分方程。ψ(x，y，z)是待求函数，它是x,y,z三个变量的复数函数，就是说函数值不一定是实数，也可能是复数。式子最左边的倒三角是一个算符，意思是分别对 ψ(x，y，z)的x,y,z坐标求偏导的平方和。E是粒子本身的能量；U(x，y，z)是描述势场的函数，假设不随时间变化。在给定初始条件和边界条件以及波函数所满足的单值、有限、连续的条件下，可解出波函数 Ψ（r，t）。由此可计算粒子的分布概率和任何可能实验的平均值（期望值）。由于薛定谔方程是一个线性微分方程，所以任意几个解的线性组合还是薛定谔方程的解。因这些特征，只能联系类圈体模具。

1、庞小峰非线性量子力学之眼

由于微观粒子及其相互作用特征看不见，又极其复杂，一种模具可以解释多类现象；而一类现象又可以用多种模具，也不觉为奇。但庞小峰的非线性量子力学之眼是，他强调：1）发展是主题；2）改进的目的是使微观粒子局域，以给出合符粒子具有波-粒二象性；3）建立非线性量子力学是方向，这是把非线性相互作用加进薛定谔方程，使粒子的性质改变。

如果与云南陈蜀乔教授联系超弦目标的真空图像比较，庞小峰教授是简直不提超弦，而实际扩展了超弦理论的应用：如他创造性建立了完整的生物能量传递的新理论；建立了开放的、具有自组织结构的非平衡生命系统的能量、物质和信息相互变化的新的热力学关系及氢键高分子和生物分子系统中质子传递的新理论和生物光子发射的理论，为揭示细胞上的离子通道和植物光合作用的机理，奠定了理论基础；创造性提出和揭示了红外和微波的热和非热生物效应的机理和特征以及磁化水的机理；提出了超导电子和超流液氦原子是一类特殊孤立子，并论证了超导性和超流性是由于这类孤立子的运动引起的；创造性提出和建立了具有重要意义强耦合电-声子系统的新的状态函数等。如果与湖北王守义先生海谈Navier-Stokes（纳维-斯托克斯）方程和非线性数学对照，庞小峰教授是实实在在建立和完整了的非线性薛定谔方程及其各类解法和理论，撰写了多种非线性量子力学理论专著和论文，并在国内外出版。

2、庞小峰非线性量子力学研究之路

从刘月生教授的结构信息与交换信息看来，真实的微观粒子及其实验是结构信息；而量子力学理论无论线线的还是非线性的，其“歌词、歌曲”都只能属交换信息。所以说，把非线性相互作用加进薛定谔方程，是使粒子的性质改变，其说法不确切。实际这只是把量子力学描述的粒子的性质改变。庞小峰，四川西充县人，1945年12月出生。1999年作为特殊人才，从四川民院引进到成都电子科技大学高能电子学研究所作教授，博士导师。现是学校生物物理学科，电磁生物学和生物电子技术省重点实验室主任和生物物理与生物电子学部级重点实验室主任，享受国务院颁发的政府津贴，兼湘潭大学教授、华东师范大学和四川大学兼职教授、纽约科学院成员、美国科学促进联合会国际成员、中国高等科学技术中心成员和中国科学院国际材料物理中心的客座成员和国际一级杂志《物理评论和物理评论通讯》的评审成员等。笔者与庞小峰交往30年，其实只有15年前的一次个多小时的面对面谈话。

那是为买到重庆出版他的新著，1994年我们亲自到四川民院庞家去拜访，还送给上了“孤子演示链”的模具。孤波一般是在水槽中演示，庞先生对用铁环编码做成的孤子演示链大加赞赏。我们与他同龄也同年考入大学。他谈到了他传奇的人生经历，使人感到命运无常：他父亲解放前作过伪县长，解放初被镇压。他是跟着在南充中学教书的大哥长大的。1965年高中毕业，他考上的是四川师范学院物理系，进校的头一年就参加学校在农村搞的四清运动，即在大学就没有正规上过课。不幸中的有幸是他进的四清工作队，还有一位从天津的大学送来受锻炼的一位著名的粒子物理学教授。庞小峰和他相遇认识，关系发展好到师生情谊，并使他钻研和爱上了教授的粒子物理学。由此也很少参加学校文革的派性活动，毕业时他留校任教。文革十年后1978年的研究生开考，他在头年也就顺利考上非常难的中国科学院物理研究所的研究生。1981年研究生毕业他获数理部理学硕士，但仍回到四川师范学院任教。郭柏灵院士和他一起编著过《孤立子》一书，1987年由科学出版社出版。1995年郭柏灵院士编著的《非线性演化方程》专著由上海科技教育出版社出版，与庞小峰1994年出版的《非线性量子力学理论》专著比较，虽各有特色，但庞书的内容联系物理更多，更容易懂一些。

庞小峰正是在读研究生时，开始了专业研究量子力学和超导、超流及孤子问题之路的。他将孤子理论应用于求解超导金兹堡-朗道GL）方程和超流GP方程，由此将孤子概念引入到量子力学来研究微观粒子的特点，他确定了由非线性薛定谔方程的孤子是局域的、具有经典粒子的特点。又通过20多年

的努力，他解决微观粒子的局域性和具有波粒二象性的办法是，只要计算和考虑微观粒子之间的相互作用，就可以抑制和阻止微观粒子的色散效应。

3、庞小峰的非线性量子力学孤波模具

庞小峰告诉笔者，世界上大多数实验室研究孤波的模具是水槽，他也不例外。据他书中描述，这是个长 38cm，宽 2-3cm 的水槽，水深 2-3cm 高，放在一个能振动的平台上。平台安有电动机，以 7-15Hz 的频率作垂直振动。据庞小峰说，另一个信号发生器是用长条橡皮筋做的，它沿水槽长在水平方向作纵向振动。实验时，会有大量水分子聚焦在一起，在水表面上的一个特定位置形成水分子密度极大的一个非传播的钟型孤立波，它的剖型与非线性量子力学中薛定谔方程的孤子形状完全相同。

水槽模具的最大特色是还能形成“暗孤子”，这模拟方程解中和量子力学中的虚粒子或空穴粒子需要的。因为也有人用橡皮筋和大头针制成单摆链孤子波演示的模具，即利用橡皮筋的扭转力矩和大头针在重力场中的大角度运动，在单摆链上成功地演示了 Sine-Gordon（正弦-戈登）方程的孤子波的产生和传播。我们提出的非线性的“孤子演示链”模具，不是说它比水槽、单摆链模具装置简单，成本低廉，操作方便，而是通过孤子演示链参加的非线性量子力学模具之争，支持庞小峰对薛定谔的波包模具的不完善性的说明；而庞小峰对非线性量子力学特定性的解释，也说明孤子演示链作为水槽模具的补充，使非线性量子力学的模具更加完善。

物理学中数学公式、方程本是来源于物理实验的数据，目的是为了更好地描述物理现象，为实验或工程设计、预见、检验提供精确的计算或数据，但从宏观发展到微观，更多的是一种数学模型或数学图像，并不便于数值计算，而且需要宏观的更直观的模型或模具去理解。例如超导、超流、光钎等宏观量子效应东西中的孤波现象，本身也可以作为非线性量子力学中波粒二象性说明的模具，但为什么又不能流行呢？因为对普通老百姓来说，它们的说明还是很抽象。中医中的阴阳五行，阴阳像一种模型，类似量子弦膜圈中的膜模型或膜面模具。五行金木水火土像一种模具，金木水火土直线排列类似量子弦膜圈中的弦模型或弦线模具，但它们之间的相生相克排列，又类似量子弦膜圈中的圈模型或旋圈模具，而古希腊的火气水土四元素说就没有圈态的循环。但总的来说把它们类比古代的量子力学，都没有提供实验或工程设计、预见、检验可精确计算数据的数学公式或方程，这仍需要具体问题再具体去探索。

西方近代自然科学的兴起，为这种数学公式或方程提供了大量的数学模式和求解方法。如海王星早有伽利略用望远镜看到，但它还是因天王星的轨道异常，被用数学推算出应当具备的位置和质量数据，才发现是新行星。然而 20 世纪进入到相对论和量子论领域，这种数学的作曲不仅更加复杂，而且作词所需的模具更难准确。这两者反映在我国，类似“伪科学”、“扳倒两论”、“弦论=胡扯+八道”等“国骂”成为一种潮流。庞小峰的非线性量子力学是中流砥柱，为各自振振有辞、五花八门“国骂”的人物找到实实在在的出路树立了好榜样。

二、量子力学的歌词与歌曲之分

庞小峰的《非线性量子力学》，好似特别为要“扳倒量子论”的人写的一样。针对质疑量子力学说的软肋；是建立在 80 年前对“电子云”、“自由电子”等没有根基的猜想，如讲对炉火中物质能烧红并发出橙红色亮光，说明核外电子的运转速率是随着温度改变而呈规律变化的重要细节，它视而不见；又如对直流导线外小磁针的偏转，电子在内、波在外的奥斯特古老的实验，提示电子的运动伴生着波的波、粒二象同时显现，它视而不见等指责，庞小峰类似四两拨千斤，仅在书后用两小节“质子的孤子态的迁移率随系统的温度的变化特点”、“质子的孤子态的传导引起的比热容和临界温度”，回答就像悠扬的音乐，在国家大剧院演奏大幕徐徐落下中结束。这里“音乐”的好坏，可以用广大科学爱好者的评论信，也可自定类似“统一物理学理论学术研究标准”，但考核不会是那种只听得懂音乐歌词，对作曲不甚了了的人说了算数。庞小峰先生重视专家的评奖，局外人给钱也不愿意卖书，有一定道理。

量子力学比音乐复杂得多，把它分为歌词和歌曲两部分只是一种为学好的比拟。音乐只读歌词类似朗读诗；诗歌朗诵也行，但不是音乐。光有类似乐器弹奏的曲调，是音乐，但这类似郭柏灵的《非线性演化方程》专著，是数学的汇集，不像庞小峰的物理专一。把歌词对应模具，也是比拟。吴新忠博士指责把类圈体三旋作模具，是把宏观搬进微观。其实庞小峰的水槽孤立波也何尝不是这样；因为“填词谱曲”模具也可不用真实的实验，也能提供灵感。

1、 自相互作用单独体系的模具模拟

《非线性量子力学》论述清晰：为创立非线性量子力学，庞小峰大有扳倒薛定谔之势，但全书读来却峰回路转。这也类似古乐词牌固定曲调有根可循。庞小峰说，发展量子力学只能选择非线性薛定谔方程和非线性克莱因-戈登（Klein-Gorden）方程，而不能选择其他形式的动力学方程。因为新量子力学不能否定和抛弃原有的量子力学，另起炉灶。即新动力学方程类似 GL 或 GP 方程式，使之具有孤子解。因为微观粒子类似局域性，它的真实存在得缘于研

究水波中分子的孤子局域效应。所以即使没有观察到由非线性薛定谔方程描述的微观粒子的局域特性的存在，也深信不疑。而这又得缘于 1839 年罗素在水渠中观察到孤立波现象。1895 年由浅水波导出 KdV（科特韦格-德弗里斯）方程。20 世纪 70 年代从 KdV 方程等一些非线性偏微分方程，用反散射方法求出了解析解,其解是一个能保持振幅不变传播的孤立波或孤子，从而在国际上引发了“孤子热”。庞小峰和崔洪农等人研究了水孤子具有粒子的许多特点。

1）庞小峰的理论为什么能使粒子的局域而具有波-粒双重性呢？庞小峰说，线性量子力学仅在非线性作用等于 0 的特殊情况下才正确，而真实的物理系统或多或少都存在非线性相互作用。非线性相互作用产生的根源和机理，首先是粒子间固有的相互作用和自相互作用的机理。其次是介质的非线性效应产生的自聚焦机理。三是粒子和背景场相互作用的自陷机理。

2）庞小峰说他不能把孤子演示链作为一种模型去解决一些问题，恰恰说明他并没有看到他的水孤波模型，并不是很直观地能反映固有的相互作用和自相互作用，而这恰恰是孤子演示链能给于补充的。线性波在很多媒介中都有色散特性。色散效应类似一束白光通过三棱镜分解为七种不同频率的光。即光的色散需要介质（三棱镜），其介质称为色散需要介质。但这一点恰恰是类圈体自旋模型能自备的。如一个类圈体作对称自旋能产生三类 62 种自旋态。而由类圈体双链编码组装的孤子演示链，也能反映固有的相互作用和自相互作用。孤子演示链也能说明非线性初始微扰对粒子的局域和孤子运动特性的影响。

3）首先来看自相互作用。色散的本质是波包的振幅随传播距离的增加而衰减，使波动或微观粒子衰减和坍塌。庞小峰的方程是除存在有色散动能项外，还存在非相互作用，它能抑制和抵消色散的衰减效应，从而使微观粒子变成一个稳定的和局域的孤子，而具有明显的粒子性。这在庞小峰的水槽模具中，需要两种信号发生器来模拟，很不直观。所以庞小峰要举不是薛定谔波包圆圈式的平面波的海水中的水波运动观察来阐述。这里的孤立波实际类似水墙，当一列水波接近海岸时，它的形状会逐渐从正弦截面变成三角截面，最终变成运动速度极快的尖峰截面。即当接近海岸时，随时间的增加，这种非线性作用使波的前端变得越来越陡，导致畸变乃至破坏，其本质也类似于色散效应，但它的机理和变化规律与先前水波不同。因为这种非线性作用造成的倒塌现象，可使波的色散效应受到抑制；两者的叠加可使波变成 KdV 方程而具有一个稳定的孤立波。这些结果是不以人的意志为转移的客观规律，因为从非线性薛定谔方程可知，此时的有效势是一个双阱势，它提供了两个基，可通过自相互作用力、自聚集、自聚焦及自陷等机制，使波局域为一个孤子而处于稳定状态。

2、两粒子相互作用的双链模具模拟

从上面自相互作用可以看出，孤波产生机制的大海，是水潮、海岸、潮汐力浑然一体，比模具水槽孤波的模拟，更具有直观的说服力。这不但说明自相互作用具有普适性，更说明自然现象或真实的实验，及至它的数学方程描述，也要比水槽模具的模拟更真实。这也许说明“填词”比“作曲”更难，即使对薛定谔这样的世界级科学大师也不例外。例如薛定谔方程在量子力学中的地位与牛顿方程在经典力学中的地位相当，但庞小峰等很多人攻击薛定谔，并不在于他的数学，而是他对自己数学的模具解读。如庞小峰攻击薛定谔的波包色散效应，核心不在数学而在模具的缺陷。因为薛定谔方程中本身就有外势项，而薛定谔的波包模具难以把它分为两部分。爱因斯坦也是如此，狭义相对论方程中的负数开平方他主张放弃，而反相人士用“超光速”模具解读；广义相对论方程中的引力他用橡皮膜模具解读为时空弯曲，弦论者却补充用弦星、毛球、葫芦吊等类带线的模具解读引力。

1）庞小峰为非线性量子力学诞生辩护举的爱因斯坦与玻尔之间的世纪争论，实质也是模具争论。那么粒子的自相互作用和固有的非线性特性的定义是什么呢？庞小峰说：在一个由多粒子或多体组成的系统中，粒子之间或粒子与另一物体之间总是存在相互作用，一旦一粒子受外界影响而发生状态变化时，也影响到其他粒子。当其他粒子运动状态变化时，则此粒子也将受到一种相互作用。这种相互作用常称为粒子间的自相互作用。专业学者是用量子场论方法研究，如哈密顿算符、耦合系数、费米子-反费米子对、泡利矩阵等工具，但物理模具、数学模型仍需其他实体模具补充来解读，因此双链式的孤子演示链得以出场。因为这种单个圈双链编码浑然一体的模具，模拟孤子运动，自然且必然地引入自相互作用和固有的非线性的特性。其次，孤子演示链的重力模拟的是相互作用场理论中粒子的自能。庞小峰说：后者在量子和经典场理论中都存在，故它是一个固有的持久的相互作用。

2）但在量子场论中，孤子演示链其实是扮演费曼图的虚拟过程的自相互作用的模具角色，也许庞小峰等很多学者都没有想到。主要原因是，我们讲它与基因双螺旋相似的实在结构过多，围绕费曼图讲它的虚拟结构很少。陈蜀乔教授说他的真空场论和弦理论，跑动耦合常数描述两个电子等的相互作

用，是可以分为初态粒子与末态粒子，及其它们之间的中间过程的。但庞小峰却换成另一种好似相反的说法，他说，把粒子的相互作用分成初始无相互作用、相互作用和最后无相互作用的作用过程是不成立的，孤立系统的概念是无意义的。例如，由于虚跃迁的存在，对于一个单一电子来讲，它连续地同自身的电磁场经历了多次相互作用，从而使自己感受到自相互作用和持久相互作用的客观存在。这些虚过程的自相互作用由费曼图描述。在量子统计物理中，这些过程可用一般的微扰理论来计算。在电子和质子之间的相互作用可借助于介子的中间玻色场来传播和调节，这些过程中的共同成分是它们产生和消灭了一个中间成分，其特点可分为四种类型。这些固有非线性相互作用会使微观粒子具有一些经典粒子的特性，对应的粒子系统的动力学方程正好就是非线性薛定谔方程。

3）这些被广泛研究过的费曼图和动力学方程并没有人给出模具演示，而孤子演示链魔幻般孤子运动正好能给予相应的模拟。因为这类双链编码结构的圈子，除开头和结尾可对应初态粒子与末态粒子外，中间并没有圈子迁移运动，模拟传播和调节的只类似中间玻色场的信息和能量，如其多项式流型等类的可通过虚核子-反核子态的产生而出现 π－π 相互作用。

3、缘起海森堡自旋思想的模具模拟

1）什么叫孤子演示链？孤子演示链起源于三旋理论坚持由环圈耦合组成链。循着这条思路，要模拟机械孤波滚动，需要以两条单链耦合为基础。这可用大小相同的穿钥匙用的铁圆圈 10 至更多个制作。让两列链圈依次对应相交，在链条垂直时，段与段圈之间有上下之分，同段同级的两个圈面可以近乎平行重合；而上下不同级段的圈面也可以相互垂直，且上下两圈面垂直的交线与其过圆心的连线可重合。这种情况称为正交。且因一个铁圈的转动为半角度，要平整又顺当，它们的相交是有严格编码要求的。这样把两根圈链耦合起来，挪动冠链圈，在垂直的时候，就会产生机械孤波滚动。我们把具有这种功能的圈链称为“孤子演示链”。

2）孤子演示链及类圈体模具并非无源之水无本之木，它的开拓缘起海森堡等人最早提出的非线性自旋理论。孤子演示链用来研究双粒子之间的相互作用，类似粒子的集体坐标表示式；具体模拟针对不同对象有不同的表现形式。例如，用正弦-戈登方程描述类似拓扑性的扭结孤子和反扭结孤子传播的孤子演示链，它的每个圈子体旋是为 1/2 的自旋，可对应粒子系统的费米子和反费米子，其玻色子可采用一个费米子-反费米子对，划段的形式出现。

3）其次，孤子演示链也缘于德布罗意 1926 年为解释电子的干涉和衍射现象，提出粒子与粒子之间有一种位置和动量耦合的假设。特别是 1927 年他提出的“双重解理论”，认为量子力学方程解除有薛定谔波表示的概率意义外，还有一类是具有“奇点”的 u 波。而所谓奇点在微分几何中，是指环面的拓扑类型。这实质是个圈态理论，而类圈体的三旋符合德布罗意的波-粒二象性既不是波由粒子组成，也不是粒子由波组成的物理图像，具有定域意义和粒子特性。即使到 20 世纪 50 年代，德布罗意认为 u 波满足确定的非线性方程，而没有给出具体的方程，且对多粒子体系和单粒子的 S 波态的描述有困难，也无实验支持。但由此我们联系麦克斯韦的电磁场方程描述电磁波传播，是单链双色圈（变化电场、变化磁场圈）的模具，启发我们把目光转向双链三旋聚色圈的孤子演示链探寻，发现描述粒子的薛定谔方程或海森堡方程或拉格朗日-欧拉方程或哈密顿方程等数学描述，正可定量用于孤子演示链或类圈体。

4）反之这些方程也符合孤子演示链把物质、能量、信息、生命的象征打包思考的特点：

a、如前面已讲过的，孤子演示链中的每个圈子体旋是为 1/2 的自旋，可对应粒子系统的费米子和反费米子；重离子晶格自局域及氢键链中出现的扭结与反扭结结构的扭结孤子对。

b、在多粒子的凝聚态物质中，当电子限制在一维金属链中时，其系统的费米面由两个平行的平面组成；电子密度波的形成是一个周期性的无衰减的孤子。孤子演示链能模拟。

c、在有机分子中的激子激发，由于相邻肽群之间存在偶极-偶极矩相互作用，如果这些肽群是周期分布和等距离分布，会产生共振，引起能量沿分子链传播。孤子演示链能模拟。

d、有些非线性偏微分方程如 KdV 方程用反色散法能求出解析解，其解是一个能保持振幅不变传播的孤立波或孤子。薛定谔方程能衔接非线性与孤子的也是振幅不变，以及解表示的平面波粒子运动如关在一个箱子里就成一个驻波。孤子演示链圈子是整数和半径固定能模拟。

e、求解三维非线性薛定谔方程，在二维情况下有人求出涡旋解和螺旋涡旋解，它的振幅在沿传播方向是周期调制的，此孤子是一个空间圆柱状的波束。孤子演示链能模拟。

f、孤子演示链能表现质子的孤子态传递既可以离子缺陷开始，也可以键缺陷开始。即缺陷运动必须通过质子跳跃，这个“跨越者”有既能跨过键内势垒，也能跨过键间势垒的特点。

g、从陈蜀乔到庞小峰的非线性理论都强调，微观粒子不论处于相干态还是压缩态的单量子、双量

子、电-声子耦合系统，其坐标和动量之间最小测不准关系不会因运动和时间的变化而改变，这种关系只与普朗克量子常数相关。同一孤子演示链的圈子半径不变能象征模拟。

三、人一机展望非线性量子力学

一根随手携带的孤子演示链，能装下半个非线性量子力学，神奇吗？不神奇。对此，创立了非线性量子力学的庞小峰先生却说他“不好作为模型去解决问题”，奇怪吗？不奇怪。

神奇的是量子力学类似音乐有词与曲，奇怪的是量子力学的数学与模具常是阴差阳错。这正如庞先生批评薛定谔能创立薛定谔方程，却用色散的平面波包解读粒子性，模具是南辕北辙。而他自己蹈类似窠臼：用水槽装双信号发生器模拟孤波的自相互作用，模具的解读并不浑然一体。音乐的词与曲绝妙之难，一些好听音乐人们会长久记得它们的作曲者和演唱家。同样人们也难以抹掉创立量子力学丰功伟业的玻尔、德布罗意、薛定谔、海森堡、玻恩、狄拉克等人物。然而不管是线性还是非线性量子力学，其基本原理和理论的数学和求解方法，一味追求算符、矩阵、哈密顿量、本征态、基矢量、偏微分方程、拉格朗日函数、傅里叶变换、微扰求解法、分离变量法、降维求解法，等等，类似古代宫廷化音乐的技术，这像宝塔尖一样脱离了很多人驾驭数学的现实。也使造反代替创新之声在大学和研究院所都不少见。

1、 弦论研究的缺陷

要当明星的作曲家，必要的作曲知识和训练是必须的；要改造量子力学，掌握必备的数学功夫也是必要的。庞小峰先生在加入孤子问题的方程建立和求解的潮流中，作有自己独自的贡献，《非线性量子力学》中就显示有他的这些数学功夫。有人会问：为什么孤子没有取代弦论成为国际主流？其实无论孤子还是弦膜圈说，都是偏微分方程的一种模具。例如一质量均匀分布的悬线，两端固定，求它在自身重量作用下的状态，就是右端不显含 y 的二阶导数方程，称为曲线方程。所以用弦论的模具象征来表达偏微分方程的广泛运用，也无不妥。例如在萨斯坎德的《黑洞战争》书中从一根吉他弦，被拨动而激发的振动联系到一根被高度激发的弦互相缠结伸展成纱线球，在没有上限和能量更多的条件下，可以用来描述黑洞，甚至巨型黑洞这些互相纠缠的“怪物弦”。然而这种无所不能的弦怪物，作为模具也很有缺陷。

例如萨斯坎德讲，弦相遇的时候，基本弦可以相互穿越。但萨斯坎德也承认，真实模具的弦线做这些，必须切断其中一根，然后在它们穿越后重新接上它。正是在这一点上，至少庞小峰说的孤波模具胜过了萨斯坎德说的琴弦模具。例如庞小峰讲，罗素发现的孤波到 KdV 方程描述的波动特征，在两个孤子的碰撞后能保持原有向前运动，就像经典粒子的碰撞一样，这一结果已被他和很多人的水槽实验观察和数值模拟结果所证实。然而在庞小峰书第 5 章和第 8 章一些描述孤立波相互碰撞特征的图例中，可以清楚地看出这些孤立波运动也类似一道水墙，简化为一种弦线的象征，也是可以的。所以，如果不计较学派之争，把非线性量子力学说成弦理论在我国的一种自主创新发展，也是可以理解的。

2、高温超导的缺失

类此的一些考虑，庞小峰先生的《非线性量子力学》被选入《科学前沿弦膜圈说手册大全》丛书参考书目，是恰当的。这是孤子的一些标准数学方程与弦膜圈说量子力学进行的数学接轨，而我国现在有许多专业的和业余的科学爱好者，正涉足第三次超弦革命，这必将加速人们对西方超弦理论的一些标准数学方程及其求解方法和模具模拟的认识。特别庞小峰先生把非线性的一些孤子数学方程及其求解方法，运用到了有机分子的乙酰苯胺、蛋白质分子、分子晶体结构、氢键结构和质子运动等常温下一般大学和研究院所都能操作的领域，会引领第三次超弦革命更具有广泛的实践性。那么是否非线性量子力学的数学运用就完善了呢？

我们来看看庞小峰先生在超导性和超流性是由孤子运动引起方面的论证。

上世纪六七十年代国际上掀起孤子热，国内还处在层子热中，七十年代末庞小峰已在中科院物理所作研究生，为什么不把孤子的一些方程应用到层子数学上，也许他还能留中科院呢？刘月生教授是多年研究结构信息和交换信息的专家，中国没有诞生相对论和量子论，但诞生过实践论与矛盾论。其实结构信息可以类似对应实践论，交换信息可以类似对应矛盾论。因为实践前进到变革原子，也许世界上大多数国家的财力和人力还能进行核试验，但要单独搞大型强子对撞机之类的变革质子、夸克等的实践，就不太容易。这种受阻，萨斯坎德的“黑洞战争”还认为，这类实践变革即使是针对同一个事件，但如果是视界内外两种人的观察，而且又是不一致的两个观测的结论，要合在其中一种人的脑海景象中，不矛盾是不可能的。实践即使是同一个人，针对同一类的事件，但如果实验是不同时的两次观察，而且用的方法也不同，又是不一致的两个观测的结论，要合在一个人的脑海景象中，不矛盾是不可能的。庞小峰是个重视实践论的人，层子和量子是两种唯物观察的交换信息，不像孤子相对层子，人类已积累了大量的实践材料。例如庞小峰说，

1957 年巴丁、库柏和徐瑞弗提出了低温超导理论，即 BCS 理论，认为在超导体中由于电子和晶格振动（声子）的相互作用所提供的吸引力胜过电子之间的库仑排斥作用，从而使具有大小相同、方向相反的能量和自旋的两个电子形成了束缚的电子对。如果用模具来表征电子对，它的实质是什么？仅是宏观量子效应吗？

我们认为电子对的实质类似一个小环圈及面旋，它在晶格中的不被散射能环流流动，就类似飞去来器的不被“散射”。庞小峰说，宏观量子效应包括磁通量子化、超导体的涡旋线结构等，对液氦超流相也存在着与超导体中的磁通量子化相类似的环流量子化及涡旋线结构。

涡旋线结构在三旋理论中类似线旋。庞小峰在 180 页书的图 6·9 出现孤立波的水槽底部测得的水分子旋转运动的流线图，就是一个线旋示意图。奇怪的是《非线性量子力学》全书讲的都是在低温超导的应用，高温超导如从高温氧化物超导系列到铁基高温超导材料，近 20 多年来都成热门课题，为什么他不拿孤波或孤子模具去运用？高温超导研究的缺失，说明孤波模具也难一手打天下。孤波实际类似庞加莱猜想的弦球论，不含逆庞加莱猜想的弦环论。由于三旋理论能说明电子对类似小旋圈，所以在高温超导出现不久，就有公开论文发表应用。

3、两论展望非线性量子力学

也许我们应该换一种解读。从实践论来说，庞小峰长期作为一所普通大学的一名普通教师来说，做高温超导体实验的条件不如做水槽孤波实验那么容易。没有实验作基础，理论难以得到定量的自我检测。其次，庞小峰虽然对非线性量子力学的一些方程及解法进行了成功的探索和梳理，并在生物有机分子、氢键系统等力所能及的工作中作了大量的应用举要，但这种工作不是一劳永逸的，也不是直接搬到高温超导体就能轻易定量运用的。从庞小峰的书也可以看到，他建树非线性量子力学方程及解法和应用的贡献中，也有大量他人的成功探索在作基础。在这一点上，各类高温超导材料的机理与 BCS 理论并不完全一致，从而所作的定量数学描述并不如低温超导那么成功；同样我们所作的高温超导的探索，也是属于定性阶段。

1）水槽产生的孤波虽然可以表征粒子，但和孤子演示链的单独一个圈子比起来，它和自己水槽其余的水最终没有彻底切割。再说孤子的钟形弦态，与圈子的奇点孔态，在拓扑类型是不统一的；但水槽和孤子演示链各自都在模拟孤子，现象又是统一的。这里彰显了萨斯坎德微观领域矛盾自然性定律，也是非线性量子力学一种特性。而解决这种矛盾论，出路重在立言立论者以此能不断拿出实践有效的成果。我们把此实践论对应结构信息称为“机”；把前者立言立论的矛盾论对应交换信息称为“人”。结合萨斯坎德的新实践-矛盾论定律，求衡应是：人-机合作；人-机分择。在这方面庞小峰既不墨守成规，也不另起炉灶树立了好榜样。

A、所谓的人-机合作，也许也包括“没有条件，创造条件也要上”的态度，但这应该是客观和现实的。即使如庞小峰的水槽发生孤波这种自然现象，也说明孤波的产生是有条件的。其次，非线性量子力学方程也不全是产生孤波解，例如还有混沌解等。庞小峰说，由大量原子和分子组成的物理系统或物质（生命），有时具有明显的各向异性的结构特点。在此系统或物质中的微观粒子可“感受”到由介质提供的一个非线性作用。所以他把目光转向自己可接触到的物质上，去作自己立言立论的应用。即使他心比天高，想扳倒薛定谔，扳倒线性量子力学，试图统一解释宇宙的物理学理论，也得忍。但他的这些应用，即使没有做大型强子对撞机实验的技术含量那么高，因是稳扎稳打，花学校或国家一分钱就能干一分事。他成功了。

B、所谓的人-机分择，也许也包括尊重自然，尊重客观，尊重现实，尊重他人。包括不把自己看成“老子天下第一”，自己的才是逻辑一致或无逻辑矛盾的标准；见到别人做大型强子对撞机实验就骂，甚至主张学术“创新”要用暴力革命的办法去摧毁研究的对方。大型强子对撞机实验之所以能进入现代，国际科学主流不是为了一较长短才去发明。大型强子对撞机及夸克弦实验的发展路径表明、提醒的是：人类已拥有尖端的技术，管理体制也更加成熟，能够承担量子夸克等探索的实践。你不花一分钱，让有能力的人去闯，成败碍不着你的事。

C、庞小峰是个懂得人-机合作；人-机分择的人。他能知自己未来十几年之内都不太可做大型强子对撞机实验、做夸克弦实验。但他说，在生命活动中需要孤子，因为它能把生物能量和信息无损失地传到目的地，从而可保证人和动物感受外界的能量和信息的刺激。反之也才能把大脑的信息和能量正确地传到响应的目的地和组织，以维持生命体自身的生存。于是敏锐冲刺把非线性孤子弦引进生命有机分子的线链，化学分子的价、键链，氢键系统的质子运动链。因都能紧密暗含孤子演示链的模具，不但成功；反之，这里孤子演示链的费曼图也暗示价键有夸克弦。

2）于是那些“扳倒量子论”的电子云、自由电子在这里，也许变成了夸克-胶子色荷云、夸克海、海夸克。人-机分择，未来低碳清洁无核污染的新能源如“夸克球”颗粒，就让大型强子对撞机的设备去研究、生产供应全球吧。宁平治先生说，作为基础研究，物质微观结构研究的潜在意义，在于其某

些方面未来可能转化为技术与生产力：100 年前卢瑟福研究“有核原子”时，并不清楚他开创的原子核物理研究成果将导致核能源等的应用。质子内复杂的夸克-胶子运动，决定了质子内有一定的电荷分布和磁化分布。电子探针通过电子-质子弹性散射可探知质子内部的电磁结构。探测核子大小和结构是直接采用“形状因子”的定义。形状因子反映质子的非点特征，联系着质子大小，可以反映出电子分别与有结构的核子或无结构的“点”核子发生散射时的差别。有新实验揭示，质子的电荷分布具有球形和非球形的电荷云，它们叠加的效果对应于质子的整体变形。通常情况下，夸克和胶子被强相互作用力禁闭在强子中，通过对普通原子核“加热”，有可能使强子“融化”从而形成由自由夸克和胶子组成的夸克-胶子等离子体。这些工作当然不是我们人人能做的，但我们能不让做吗？

3)而孤子演示链费曼图从夸克-胶子色荷云、夸克海、海夸克也可以联想做力所能及的人-机合作，如据王小龙先生报道，德国的迈特纳多佛教授开发出一种电子皮肤，能让机器人分清冷热轻重等多种感觉，并在一个机械臂上获得了应用。这是他和同事设计了一种只有 5 平方厘米大小的六边形电路板的基本模块。每一块电路板上包含有 4 个红外传感器、6 个温度传感器和一个速度传感器，这些传感器能“察觉”到一厘米范围内的任何物体。此外，这种电路板上还留有一定的扩展空间，可供以后加入如包括压力传感器在内的其他功能的传感装置。在实际应用时，将这些“皮肤模块”像蜂窝一样拼接起来就能构成面积较大的电子皮肤。

A、联系把古代中医看作类似我国古代人-机合作的量子力学，那是古代在没有现代量子力学的技术手段和知识积累下，中医用力所能及理解的“阴阳五行、相生相克”模具和望闻问切的“皮肤”等手段，进行力所能及的推广普及应用。也许有人会问：成都名中医对坐月子是受中医文化影响的陋习等言论进行炮轰，方舟子的反轰是，中医重复传统的伪科学和迷信，成都名中医只会剽窃西医的说法，让看的国际期刊文献也看不懂；成都名中医要比医生资格？中医文凭不过是用一张纸来骗人。应如何对待呢？其实绵阳名中医张耀主任医师说，诋毁中医是伪科学，极为偏激；西医传入我国只有近百年的历史，中医药技术为中华民族的繁衍做出了不可磨灭的贡献，就说得好。由于未来十几年之内我国中医，甚至西医，要普及应用或学习现代量子力学，技术和条件都还难具备，所以从人-机分择来说，传统的中西医药技术，仍是能做出不可磨灭贡献的需要。这里望闻问切的中医“皮肤”联系电子皮肤的科学，从表面看也都没有达到夸克-胶子色荷云、夸克海、海夸克的深度，但其相同原理也在起作用。即从真实的皮肤到我们人的大脑，实际也有电子皮肤类似物理的作用。深层次正像庞小峰的孤子模型应用讲的，孤子对能量和信息无损失地传递，起着将环境与体内组织区分开来的作用，与此同时还具有强大的交互能力。这正是中医量子力学模具与孤子模具相通相应的地方。

B、两论展望非线性量子力学，人-机合作；人-机分择能提供的领域很多、很广。例如类似电子云、自由电子、夸克海、色荷云孤波的普遍存在，有人利用研发的新型光学传感器 PROPS，发现大肠杆菌的个体细胞会产生类似神经元放电那样的尖峰电脉冲。这种电尖峰信号也许与这些细菌细胞中的离子通道的开放有关。于是采用一种荧光蛋白杂交使用方法，像生物探针那样对个体大肠杆菌活细胞进行电生理测量，结果发现许多细菌细胞会有电光闪烁，有些细胞缓慢地闪烁，有些则快速地闪烁，频率在一赫兹左右。在闪烁的大肠杆菌细胞中的这种尖峰样电活动持续的时间在 1 至 40 秒间不等，而且还对一系列的物理和化学干扰敏感。这种检测到某个细菌细胞膜会产生类似神经元放电那样的尖峰电脉冲信号的技术，是令人震惊的，它可用于检测医学、环境和工业中具有重要意义的多种细菌的膜电位或电压。

C、前沿基础科学如果属于“学术”，应以包容的态度对待其发展存在的问题与缺陷，通过争鸣和讨论达成共识，更是一种人间正道。而引发人-机恐惧的是把自己看成“老子天下第一”，自己的才是逻辑一致或无逻辑矛盾的标准这类人-机竞争。王一方先生说，以炫耀和利益为目的，如在食品中掺入塑化剂，在牛奶中注入三聚氰胺的“创新”，缺乏道德的“正当性”，偏离了“人间正道”。祝庞小峰先生的非线性量子力学在人间正道高歌猛进。

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蜀人与西藏披毛犀

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Abstract: 蜀人与西藏披毛犀邓洪 蔚雷最早的两河流域苏美尔文明为蜀人所创，有证据吗？中华远古文明最早发源于蜀，有证据吗？如果说人类最早的顶尖优势文明，起源于 8 000 多年前的四川盆塞海洋文明和山寨城邦文明，那么就能说明在西方海洋文明产生之前，嫘祖、夸父、盘古、女娲、伏羲、蚕丛等先王，就已经在四川盆塞内陆海及四周城邦之间演习操练过多时了。

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蜀人与西藏披毛犀邓洪 蔚雷最早的两河流域苏美尔文明为蜀人所创，有证据吗？中华远古文明最早发源于蜀，有证据吗？如果说人类最早的顶尖优势文明，起源于 8 000 多年前的四川盆塞海洋文明和山寨城邦文明，那么就能说明在西方海洋文明产生之前，嫘祖、夸父、盘古、女娲、伏羲、蚕丛等先王，就已经在四川盆塞内陆海及四周城邦之间演习操练过多时了。例如，湖北学者胡远鹏先生认为：苏美尔人就是蜀人。这从《山海经》这种“涸海古卷”以及类似《旧约》的“死海古卷”，可以得到印证。但《山海经》是山海文明的映证吗。《全球通史》讲：苏美尔人，似乎既不是印欧人的一支，也不是闪米特人的一支。他们的语言与汉语相似。这说明他们的原籍可能是东方某地。胡远鹏先生认为这个“东方某地”就是中国的四川。段瑜先生在《光明日报》上也曾发表过一个类似观点：世界先是四川的，后来四川是世界的，再后来四川是中国的。远古的四川人叫蜀人----从人类的原语或母语学可以推证：蜀人得名与烧烤有关----即蜀人是最早吃熟食的人。四川的竹林中，爱出一种叫笋子虫的金黄色的昆虫，在火上烧烤，会发出“苏苏苏”的声音，非常好吃，而且香味扑鼻。原始的蜀人扎堆吃这种烧烤的时候，随着烧烤发出的“苏苏”声，有人最先学着喊叫出“苏苏”声，接着大片人群也附和喊叫出“苏苏”声。这就是蜀人最早的原语或母语。后来这类现象成为了一种习惯，外来的原始人群见之，也就把四川这里的原始人叫“苏”人，或“熟”人。再后来到原语或母语变成了有语言和文字，“苏”人或“熟”人的叫法被规范为了“蜀”人。然而这些算证据吗？由于证据的缺乏，长期以来这些推论既无法被证实，也无法被证伪。其次，即使这些算证据，“蜀”人最早从何而来？他们在冰期到有语言和文字这几百万年

期间的迁徙路线图，是怎样缠结的呢？2011 年 9 月 2 日出版的《科学》杂志的报道，因中科院古脊椎动物与古人类研究所的考察队，2007 年在喜马拉雅山西部海拔 4200 多米的扎达盆地中，发现的一具完整的披毛犀头骨和下颌骨，也许能为绘制这种迁移路线图，提供新的判断。考察队邓涛等研究专家认为，披毛犀并非唯一一种起源自青藏高原的冰期动物，独特的青藏动物群可以追溯到晚中新世时期。与披毛犀的演化历史相似，岩羊的祖先也出现在扎达盆地，在随后的冰期里扩散到亚洲北部。与披毛犀一样具有巨大体形和厚重长毛的牦牛，也被发现在更新世时期向北扩散，远至西伯利亚的贝加尔湖地区。在青藏高原现生动物群的典型种类中，藏野驴在北美阿拉斯加的更新世沉积物中也有发现。藏羚羊的起源，可以追溯到青藏高原北部柴达木盆地、晚中新世时期的库羊。雪豹的原始类型，发现于扎达盆地的上新世，并在更新世扩散到周边地区。西藏披毛犀的发现，对青藏高原隆升的研究也有着重要的参照意义。邓涛说，如今的扎达盆地冬季平均温度大约在摄氏 0 度到零下 4 度，这也是西藏披毛犀适宜的生存温度。由此可以推测认为，早在 370 万年前，扎达盆地的温度与此相仿，在海拔上已接近甚至超过目前 4200 多米的高度。过去，人们一直在极地苔原和干冷草原上寻找第四纪冰期动物群起源问题的答案，如今邓涛等人的研究，为解答这类问题，指出了一个新的地理坐标——青藏高原上的严酷冬季，早已为耐寒的猛犸象动物群中的成功种类提供了寒冷适应进化的最初阶段。因为猛犸象和披毛犀都是最具代表性的第四纪冰期动物，而长期以来冰期动物群被认为与更新世的全球变冷事件密切相关。这些动物的身体构造也表现出对寒冷环境的适应，如体形巨大、身披长毛。由于这些特征，科学界推测认为，这些冰期动物起源于北极圈，此后随着冰期的来临逐渐向南迁移。然而长期以来无法被证实。但邓涛等人的新发现证实，以往的推测根本就是南辕北辙。因为西藏披毛犀的出现，表明冰期动物起源于西藏，而不是北极。这是根据西藏披毛犀的更原始形态和更久远的时间，表明它不仅不是北极圈中发现的冰期动物的“后裔”，相反是它们的“祖先”。晚更新世的披毛犀是已绝灭的最著名的冰期动物之一，是犀牛的一种。披毛犀具有非常粗壮的骨架、厚重的皮毛和巨大的鼻角。然而，化石记录的缺乏使披毛犀的早期历史模糊不清。20 世纪初期，在河北泥河湾，法国古生物学家德日进发现了一个外壁上具有披毛犀特殊褶曲的乳齿列，因而将这件标本归入披毛犀。它清楚地显示了一些原始的性状，表明披毛犀应该起源于亚洲。但由于材料太少，在起源问题上，早年的这件标本没有足够的说服力。在扎达盆地发现的新种，被命名为西藏披毛犀，包括属于同一成年个体的头骨、下颌骨和颈椎。西藏披毛犀具有披毛犀的一系列典型特征，包括修长的头型、骨化的鼻中隔、宽阔而侧扁的鼻角角座、下倾的鼻骨、抬升而后延的枕嵴、高大的齿冠、发达的齿窝等。然而，西藏披毛犀具有一些不同于其他进步的披毛犀的特征，表明它在系统发育上处于披毛犀家族谱系的最基干位置，也就是说是最为原始的一种。根据动物群对比和古地磁测定，邓涛等人将西藏披毛犀的生活年代，锁定在上新世中期约 370 万年前，是目前已知的、最早的披毛犀。根据这些新发现，邓涛等人重新“绘制”了冰期动物的迁徙路线图。邓涛将 370 万年前的高海拔青藏高原比喻为冰期动物群的“训练基地”。它们在寒冷的青藏高原受到了耐寒的训练，此后随着冰期在 280 万年前开始显现，西藏披毛犀带着对寒冷的适应能力，走出西藏，成功地扩展到包括北极圈在内的欧

亚大陆北部的干冷草原地带。除了西藏披毛犀外，目前已知的还有 3 种披毛犀：早更新世约 250 万年前中国北方的泥河湾披毛犀，中更新世约 75 万年前西伯利亚和西欧的托洛戈伊披毛犀，晚更新世欧亚大陆北部广布的最后的披毛犀。最后的披毛犀在 1 万年前的更新世末消失。披毛犀的所有已知种都生活在欧亚大陆的寒冷环境中，尤其是西伯利亚，有限的几个分布靠南的地点都是高海拔地区，位于青藏高原内部或靠近其东缘，如青海共和、甘肃临夏和四川阿坝。随着全球气候变冷，严寒环境漫延，披毛犀的祖先从高海拔的青藏高原向高纬度的西伯利亚迁移，最后演化为最成功的冰期动物之一。根据类似这个逻辑，我国著名冰川学家韩同林等人早就考察证明，第四纪大冰川期，中国已成地球大冰球的一部分。如果设想在约 100 多万年前，全球各大洲虽都有直立人，但为避惧严寒，他们中的一些优势群体都大迁徙到了非洲，约 20 万年前又从非洲走出，这样既能回答各地的人类起源化石发现问题，又能回答现代人种在非洲汇合杂交的起源。但各大洲的直立人约 100 多万年前为什么能到达非洲？约 20 万年前为什么又能回到祖籍地呢？这就是因为最早吃熟食的蜀人，具有类似西藏披毛犀一类动物的顶尖优势。这不仅是说最早吃熟食，长期吃熟食，人类的大脑生理结构更优于同期的原始人，而使蜀人成为最聪明的人。更重要的是，这些蜀人类似西藏披毛犀，在上新世中期约 370 万年前是生活在目前的高海拔的青藏高原，他们在寒冷的青藏高原受到了耐寒的训练。在迁徙到附近四川盆地后，由于食物丰富，又学会最早吃熟食，他们的群体组织强度大增，智力开化强度也大增。后随着冰期在 280 万年前开始显现，蜀人带着对寒冷的适应能力，走出四川盆地，成功地扩展到包括非洲赤道圈在内的欧、亚、非、澳大陆的干冷草原地带。而他们的使者在欧、亚、非、澳大陆的探险和回到祖籍地之间的交流，带回的信息极大地在外来的原始人群中传播，为欧、亚、非、澳等各大洲中其他的原始人群，提供了非洲赤道圈附近是直立人避惧严寒的好去处，从而他们中的一些优势群体大都迁徙到了非洲。而约 20 万年前又为他们从非洲走出，提供了陆路和海路的信息。由此不难想象世界文明起源于 8 000 多年前的四川盆塞海洋文明和山寨城邦文明，也不难想象中国后来的北方丝绸之路、南方丝绸之路以及海上丝绸之路的渊源问题。

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