

SCOTTISH JOURNAL OF  
ARTS, SOCIAL SCIENCES  
AND  
SCIENTIFIC STUDIES

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VOLUME 13, ISSUE II  
July, 2013

**Articles**

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<b>Managing Adult Education Programme for Poverty Alleviation in Nigeria through Effective Utilization of Guidance and Counselling Services .....</b>	<b>124</b>
<i>Chima Ify Martha-Rose .....</i>	<i>124</i>
<i>Anthonia Emmanuel Inaja .....</i>	<i>124</i>
<b>Learning English and Indigenous Students' Needs .....</b>	<b>136</b>
<i>Shahrier Pawanchik .....</i>	<i>136</i>
<i>Fatan Hamamah Yahaya .....</i>	<i>136</i>
<i>Anton Abdulbasah Kamil .....</i>	<i>136</i>
<b>"I Beg Your Pardon, I Never Promised You a Rose Garden" An Interpretation of Meaning and Aesthetic in Urban Residential Landscape .....</b>	<b>145</b>
<i>Ismail, N. A., .....</i>	<i>145</i>
<i>Egoz, S., .....</i>	<i>145</i>
<i>Grant Cushman, .....</i>	<i>145</i>
<i>Aziz, N. A., .....</i>	<i>145</i>
<i>Mohd Yunos, M. Y., .....</i>	<i>145</i>
<b>Application of Scheduling in Low-Volume Systems Services .....</b>	<b>162</b>
<i>Salami, Akeem Olanrewaju. ....</i>	<i>162</i>
<b>Duong Thu Huong's Novel without a Name: A Silent Cry from Vietnam .....</b>	<b>177</b>
<i>Dr. Manimangai Mani .....</i>	<i>177</i>

<b>Variations in demographic correlates of contraceptive usage among married women in Nigeria (1999-2008).....</b>	<b>186</b>
<i>Ojeifo Rekiayat T.....</i>	<i>186</i>
<i>Amoo Emmanuel O,.....</i>	<i>186</i>
<i>Akanbi Moses A.....</i>	<i>186</i>
<i>Ogbeide Francis .....</i>	<i>186</i>
<b>Indigenous Akan Political System: A Religious Overview.....</b>	<b>200</b>
<i>Mr. Vincent Assanful.....</i>	<i>200</i>
<b>Sources of Complexity in the Yorùbá Numeral System.....</b>	<b>210</b>
<i>Fúnmi Olúbòdé-Sàwè .....</i>	<i>210</i>
<b>Unexplained abortions of immunological origin.....</b>	<b>224</b>
<i>C. Mechatl,.....</i>	<i>224</i>
<i>S. Tebibel, .....</i>	<i>224</i>
<i>F. Nedjar ,.....</i>	<i>224</i>
<i>F. Abdelouahab , .....</i>	<i>224</i>
<i>A. Boudah.....</i>	<i>224</i>
<b>Awareness of Solid Waste Management: Reduction Re-Use and Recycling Among Some Communities of Jos Metropolis of Plateau State, Nigeria. ....</b>	<b>234</b>
<i>Dorah, N. Damar Ph.D.....</i>	<i>234</i>
<i>Hulda, M. Davwet.....</i>	<i>234</i>
<b>How Much Does A (European) Head Of State Cost? .....</b>	<b>244</b>
<i>Prof. Herman Matthijs.....</i>	<i>244</i>

# Managing Adult Education Programme for Poverty Alleviation in Nigeria through Effective Utilization of Guidance and Counselling Services

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## **Abstract**

The researchers in this study explored the management of Adult Education in reducing poverty which is a global issue that has ravaged and plagued Africa in general and Nigeria in particular. This was achieved through the use of counselling services. The study population included all the adult education officers in the South Eastern states of Nigeria (Abia, Anambra, Enugu, Ebonyi and Imo). Thirty (30) adult education students were randomly selected from the three South Eastern states for the study. Purposive sampling technique was used in selecting Anambra, Imo and Ebonyi States. The choice of the three states were prefixed on the fact that the first pair – Imo and Abia once enjoyed the same geographical delineation as well Anambra and Enugu. Ebonyi was newly created out from Enugu and Abia State. This offered a fair representation of all the states in South Eastern Nigeria. The study adopted a quasi-experimental design. Copies of the Management Problems of Adult Education Programme Questionnaire (MPAEPPQ) were validated and administered to all the adult education officers in the 21, 26 and 13 local government areas in Anambra, Imo and Ebonyi States respectively. This served as a conduit for obtaining information on the problems they encounter in managing the programme towards achieving poverty alleviation. Based on the data collected, Counselling for Proper Management of Adult Education Programme Therapy (CPMAEPT) was used in educating the participants on the lapses discovered in the management of the programme. Two research questions that guided the study were answered using mean scores while the only hypothesis was tested using z-test. Recommendations were made based on the findings of the study.

## Introduction

Those who hold strongly to the aphorism that Nigeria is the giant of Africa, do so largely because Nigeria is richly endowed with human and natural resources. It is also an indubitable fact that in spite of her socio-political shortcomings as well as perceived and documented economic mismanagement, she still ranks among the world's fiftieth richest countries. This paradoxical country is the seventh largest exporter of oil in the world and the largest in Africa, yet quite contradictory to say that some analysts still believe that "Nigeria is today wearing the toga of a poor state" (Dike, 2009). According to the (CBN 2000) report, the incidence of poverty in Nigeria stands at 69.2%. More than 80% of Nigerians live on less than one dollar per day which is below the Millennium Development Goals (MDGs) report (2006) to eradicate extreme poverty and halving the population living on less than \$1 per day. Doyle (2004) as cited in Garuba (2011) also affirmed that Nigeria has the largest population in Africa with between 50-60% of that figure living below poverty line. Achor (2001) further buttressed this fact as he stressed that the cash income of an average Nigerian remains so miserable and insufficient to provide life's necessities such as food, water, shelter, medical care and basic education. The country invariably becomes a nation experiencing poverty in the midst of plenty. The UNDP (1998) Human Development Report HDR for Nigeria, summarized her as the poorest and most deprived OPEC country.

In generic terms, poverty can be conceived as a condition of serious deprivation. It is manifestly, a lack of human and material resources necessary for living within a minimum standard conducive to human dignity and well being. Poverty can emanate from inadequate distribution of resources and impeded access to basic social services such as education and health. Other causative agents and ever present concomitants are food scarcity, unemployment, low life expectancy, low adult literacy rate, and lack of participation in the decision making processes (Webb, Brown and Yohannes 1992, Carney 1999, World Bank 1999). Garuba (2011) affirmed that poverty goes beyond a condition of lack of resources; it extends to social inequality, insecurity, illiteracy, poor health, restricted or total lack of opportunity for personal growth and self realization.

Poverty persists in Nigeria in the midst of abundant natural resources and a robust economy for obvious reasons; corruption is endemic and systemic, poor management of funds is competing with high unemployment rate, misplaced priority, illiteracy, and lack of deserved attention to education. It is noteworthy to mention that technical and skill training that are veritable agents for promoting acquisition of knowledge, creativity and innovation through adult education programmes have been jettisoned.

Documented evidence reveals attempts made by successive governments to alleviate poverty in Nigeria. Garuba (2011) chronicled efforts as made by President Olusegun Obasanjo through Operation Feed the Nation (OFN) and President Shehu Shagari through his Green Revolution Programme, General Muhammed Buhari spent the entire years of his truncated regime fighting corruption and indiscipline which he rightly considered as one of the major causes of poverty. General Ibrahim Babangida tried to tackle poverty by fighting unemployment through the National Directorate for Employment (NDE), National Economic Reconstruction Funds (NERFUND) and National Agricultural Land Development Agency (NALDA). Mrs. Maryam Babangida initiated the better life programme for Rural Dwellers while Mrs. Abacha started the Family Support Programme, all aimed at alleviating poverty and meeting the needs of the populace.

Regardless of all these attempts at alleviating poverty, acquisition of knowledge through heuristic channels still remains the vital instrument for improving and enhancing human quality, healthy living and uplifting the social standing of individuals. It is also a sure gateway

to freedom from poverty and starvation. Qualify and skilled knowledge through education serve as instruments for transforming and empowering individuals to be conscious of their environment and be able to maximize their potentials (Garuba 2011). Adeloje (1999) believes that education is a veritable weapon against ignorance, poverty and disease. Studies have confirmed the relationship between poverty and education. Education will no doubt help in improving human quality, development of social consciousness, empowerment, social inclusion and participation and offering employment opportunities thereby reducing the scourge of poverty (Ribich 1968, Valley 1998, Preece 2005, Akoojee and McGrath 2006, Garuba 2011). This explains in part why the British Department for International Development (DFID) sees education as a potent wheel to half poverty by the year 2015. Still stressing on the relationship between poverty and education, Garuba (2011) recorded Dhanarajan's (2001) report that in Peru, almost two thirds of the extremely poor households are headed by someone with no education, compared to less than one third of non poor households.

Adult education becomes necessary as it offers an opportunity to enhance access to quality education and skills acquisition to adults and youths who were not able to complete their primary and secondary schooling careers. Adult education is an organized programme of activities designed for adults to acquire knowledge outside the formal school setting. Adult education programme was stipulated in section 6 of the 2004 National Policy on Education and according to Obilor, Ofonedu, Okechukwu and Egbucha (2005), the national objectives of adult education include:

- a) to provide functional literacy education for adults who have never had the advantage of any formal education.
- b) to provide functional remedial education for those young people who prematurely dropped out of the formal school system.
- c) to provide formal education for different categories of completers of the formal education to improve their basic knowledge and skills.
- d) to provide in-service, on-the-job vocational and professional training for different categories of workers and professionals in order to improve their skills.
- e) to give the adult citizens of the country the necessary aesthetic, cultural and civic education for public enlightenment.

The scope of adult education programme is vast. It should cover adult literacy, skill acquisition, skill upgrading/continuing education, civic/political education, extension education, public health education, workers education, aesthetic and cultural education. The content of such a programme should include vocational education and practical activities that would equip the learners to become productive entrepreneurs. It should also be capable of provoking creativity and innovative ideas, enlarge the economic pie and increase personal freedom (Dike 2009).

For Adult education programme to achieve its desired goal, it has to be properly managed and adequately funded. The National Report of Nigeria by the National Commission for Mass Literacy, Adult and Non-formal Education NMEC (2008) outlined the problems of Adult Education programme as follows:

- a) Poor funding, lack of co-ordination and provision
- b) Inadequacy of policy provisions and implementation of adult education programmes

- c) Lack of awareness on the importance and role of Adult learning community development
- d) Enhancement of Adult literacy class
- e) Adult education must be 100% free for the people
- f) Learning centres must be within easy reach of the learners

Provision of necessary facilities/materials to enhance learning capability of the adult learners.

The findings of a study carried out by NMEC (2008) on Nigerian Adult Education using the 36 states of the Federation including the Federal Capital Territory (Abuja) also reveal as follows:

1. Policy provisions for adult education in Nigeria are inadequate.
2. Inadequate funding; poor implementation of adult education programmes.
3. Poorly specified goals for adult education in Nigeria.
4. Unplanned scheme of work affects adult education programmes in the states.
5. Lack of learning materials make many learners to withdraw from literacy classes.
6. Lack of motivation prevents learners from participating in adult education programmes.
7. There is urgent need for regular training and capacity building for all the supervisors, facilitators and organizers of adult literacy classes.
8. Reasons for dropout and non-completion of programme include distance from learning, inappropriate timing of lessons, poverty and lack of interest.

These problems have to be tackled and the programme properly managed if the goal of poverty alleviation must be achieved. Effective management of adult education programme will make for adequate management of human and material resources. These include quality of instruction, sufficient funding, availability of adequate facilities, and sufficient motivation and enthusiasm for both teaching and learning. Other variables are recruitment, training, placement and organizing of quality personnel towards planning and implementation of the national policy on adult education programme. An effective management of the programme can be achieved through the utilization of functional guidance services rendered by professionals in guidance and counselling. The need for counselling services in the effective management of adult education programme is to promote and enhance vocational, educational and socio-personal concerns of the adult learner towards developing positive interpersonal relationship among learners; it also facilitates creative abilities, improves academic performance, effecting a positive behavioural change on the learners. At the same time, it would create entrepreneurial spirit and innovative minds and skills acquisition tendencies. The ultimate goal is to produce students who will be empowered to fight poverty. This is promised on the fact that our nation cannot make any meaningful socio-economic stride without laying emphasis on adult education, programmed and effectively managed for acquisition of knowledge, creativity and innovation.

Guidance and counselling services according to Adewuyi and Akinade (2007) are those services rendered to individuals to bring about the best potentials and talents for mankind. Guidance and counselling services are an integral part of total educational and organizational programmes. A sound guidance and counselling programme would require the cooperative

efforts and planning of management, students and staff of an institution (Danesay 2007). The guidance services applied in this study are: orientation, information, appraisal, placement, in-service programmes and training, counselling, referral and evaluation. These services are further explained in the treatment package.

It is therefore expected that the adult education programme that is upgraded in this study will help produce students who can then be less affected by poverty.

### **Research Questions**

1. What are the management problems associated with effective adult education programme for poverty alleviation?
2. What are the guidance and counselling intervention measures needed for effective management of adult education programme for poverty alleviation?
3. Will effective management of adult education programme through utilization of guidance and counselling services enhance the alleviation of poverty in Nigeria?

### **Hypotheses**

1. There is no significant difference on the treatment effect between the experimental and the control groups at posttest.
2. Location has no effect on the counselling intervention measures needed for effective management of adult education programme for poverty alleviation.

### **Methodology**

The research method adopted for this study is a quasi-experimental design employing the pre-test, post-test, control group approach. The target population consisted of all the adult education officers in the South Eastern States of Nigeria (Abia, Anambra, Ebonyi, Enugu and Imo). Purposive sampling technique was used in selecting Imo, Anambra and Ebonyi. The choice of the three states was prefixed on the fact that the first pair – Imo and Abia once formed a single state as well as Anambra and Enugu. Ebonyi was newly created out of Enugu and Abia. This gave a fair representation of all the states in the South Eastern Nigeria. All the adult education officers in the 21, 26 and 13 Local Government Areas in Anambra, Imo and Ebonyi respectively, were used for the experiment. This is because their responses to the Management Problems of Adult Education Programme for Poverty Alleviation Questionnaire (MPAEPPAQ) indicated that they were all experiencing problems in the management of adult education programme (see table 1). Ten adult education students were also purposively selected from each of the three states making a total of thirty students used for the study. Five trained research assistants also helped in data collection. The thirty adult education students were interviewed to get their opinion on whether proper management of adult education programme will enhance the alleviation of poverty.

Two instruments were used in collecting data for the study. The Management Problems of Adult Education Programme for Poverty Alleviation Questionnaire (MPAEPPAQ) and Counselling for Proper Management of Adult Education Programme Therapy (CPMAEPT). The MPAEPPAQ contains participants demographic information and a list of 12 possible management problems of adult education programme. They were expected to respond honestly to the items in the questionnaire. MPAEPPAQ was duly validated by experts in Measurement and Evaluation and also yielded to a test re-test reliability of 0.71 after an interval of two weeks.

The CPMAEPT was also designed by the researchers to adequately educate and train those in the experimental groups in the strategies for effective management of the adult

education programme in order to equip adult leavers with necessary skills for self sufficiency and to fight poverty. The content of the CPMAEPT was based on the management problems identified by the researchers through the use of MPAEPPAQ. The instrument was validated by experienced and well trained professionals in guidance and counselling.

### **Procedure for data collection**

Copies of the MPAEPPAQ were administered to the sixty adult education officers in the 21, 26, 13 Local Government Areas in Anambra, Imo and Ebonyi States respectively. Their responses to the questionnaire confirmed that they were all experiencing problems in the management of adult education programme. The participants were randomly grouped into treatment and control groups. The treatment group received treatment while the control did not. Table I summarizes participants' responses to MPAEPPAQ.

### **Treatment Plan**

The CPMAEPT was prepared by the researchers to help equip participants with necessary managerial guidance needed for proper management of adult education programme in their various Local Government Areas. The therapy made up of guidance and counselling services was delivered to the participants in the treatment group using lecture method. A printed package was given to each of them to study and digest at home. Researchers followed up treatment through phone calls. A date was fixed after two weeks for meeting and discussion on their experiences, problems and progress on understanding the content of the package. Posttest came immediately after treatment. Their responses on the MPAEPPAQ testified to the possible effect of the CPMAEPT treatment package in assisting participants in effectively managing adult education programme for poverty alleviation. Summary of the CPMAEPT treatment is shown below:

### **CPMAEPT Treatment Package**

1. **Orientation:** This highlighted the series of activities to be designed by the managers of adult education programme aimed at assisting new students, teachers, facilitators and employees adapt to the new environment. This is done to reduce initial trauma, anxiety and to get them acquainted with the demands of their new environment. Orientation will help the students face the challenge of study habit, recreational activities, interpersonal relationships and new mode of behaviour. It will also provide information to the facilitators on the expectations and challenges of the course content, scheme of work, time table and programme of activities.

2. **Information service:** This requires collection, collation, analysis, interpretation and utilization of knowledge, data, ideas, facts and figures needed for better self understanding, planning and decision making. The information should be tailored towards the three areas of school need which are educational, vocational and socio-personal. The students should also be provided information on their environment and opportunities they have in ameliorating their conditions and fighting poverty. Information should be provided on where and how to source for facilities, fund and support for the smooth running of the programme. Such information service should also cover all the problems of adult education programme listed on table 1.

3. **Appraisal service:** In appraisal service, descriptive and objective data are collected on individuals or group of individuals. The data are collated, analyzed, interpreted and used for decision making. Mode of data collection is by use of tests such as intelligence, aptitude, achievement. Other non-test modes of data collection include rating scales, interview, observation, questionnaire, interest, inventories, checklists, anecdotal records and case histories. These will help in assessing the students' initiative, innovation and entrepreneurial



ability. The appraisal service should be comprehensive enough to cover the cognitive, affective and psychomotor behaviour of students.

4. **Planning and placement:** During the placement stage, data so collected at the appraisal stage is used to assist students in educational and vocational placement. Efforts are made to ensure that students engage in educational activities that tally with their age, sex and abilities. In vocational placement, students are also assisted and guided on the appropriate training, training institution and linking the relationship between the training programme and employment opportunities in order to alleviate poverty.

5. **Referral service:** This entails redirecting a problem to a more appropriate centre where help can be got if the problem is beyond the competence or expertise of the counsellor, facilitators or the officers in charge of the adult education programme. Students can be referred to skill acquisition, entrepreneurship or technical education centres in and around the community if it is discovered that literacy education is not helping the concerned individuals. Referral can also include channeling all adult education problems to the appropriate quarters where maximum assistance can be offered. These may include problems of fund, policy matters or non-governmental agencies for support.

6. **Evaluation:** Evaluation helps to appraise the extent to which stated objectives, goals and plan of adult education programme are achieved or otherwise. It also helps to determine the areas that need modification, adjustment and improvements. Evaluation should cover the quality of instruction and methodology, adequacy of teaching and learning materials, staff development through in-service training, sufficiency of fund and quality of facilitators and teaching staff.

7. **Counselling service:** Counselling is an integral part of the guidance services. Counselling services which can be rendered to an individual or to a group usually focuses on the following areas of need:

- a) **Educational counselling service:** This lays emphasis on helping students make the best use of their educational opportunities and be adequately equipped to face numerous school challenges and problems. These challenges include choice of subject in relation to vocation, acquiring effective study habits and facilitating creative abilities.
- b) **Vocational counselling service:** This highlighted the procedure for obtaining information concerning an individual's traits, interests, training, work experience and work attitude. Vocational counselling also includes in-service training, job adjustment and facilitating creative abilities on the learner in preparation for wealth creation.
- c) **Socio-personal counselling service:** This talks about developing positive, interpersonal relationship with one another and other behavioural problems.

## Data Analysis

**Table 1: Data for mean scores of participants at pre-test and posttest**

		Treatment		Control	
		Pre-test	Post-test	Pre-test	Post-test
1	Inadequate policy provision for adult education.	3.10	1.8	3.67	3.1
2	Inadequate number of qualified staff	3.87	1.54	3.0	3.4
3	Insufficient information management and communication technology	3.23	1.67	2.7	3.0
4	Lack of enhancement on career development through in-service training and other programmes.	3.97	1.83	3.0	3.2
5	Inappropriate and poor quality of instruction and unplanned scheme of work.	2.90	1.47	3.5	3.5
6	Lack of adequate infrastructure, equipment and facilities to enhance teaching and learning.	3.60	2.10	3.5	3.2
7	Lack of adequate motivation strategies and reward for workers.	3.23	1.9	4.0	3.4
8	Inadequate vocational, technical and skill acquisition and entrepreneurial education.	3.27	1.60	3.3	3.5
9	Insufficient and inadequate funding.	3.4	2.30	4.0	3.3
10	Inability of the school programme to solve basic human needs and alleviate poverty.	3.23	1.9	3.5	3.1
11	Inability of the students to afford tuition fees (poverty)	3.27	2.00	3.5	3.4
12	Lack of interest and commitment on the part of the students.	3.23	1.87	3.1	3.6

### Hypothesis 1

There is no significant difference on the treatment effect between the experimental and control groups at posttest.

**Table 2: Z-test statistics of difference in mean scores of experimental and control groups**

	No. of Respondents	Mean score	Standard deviation	Z-critical	Z-calculated	Decision
Pre-test	30	2.42	0.97	1.96	4.36	Reject
Post-test	30	3.3	0.53			

The hypothesis was rejected since z-calculated (4.36) is greater than the critical z (1.96) at 0.05 level of significance. This means that there is significant difference on the treatment effect between the experimental and control groups at posttest.

## Hypothesis II

There is no significant difference on the treatment effect between the experimental and the control groups at posttest.

**Table 3: Dependent variable: VAR 00002**

VA	Mean	Std. Deviation	N
CPMAEPT Urban	1.6111	.38873	9
Control Urban	3.2333	.23979	9
CPMAEPT Rural	2.0762	.25081	21
Control Rural	3.3190	.24417	21
Total	2.6150	.74942	60

**Table 4: Tests of between subjects effects**

Source	Type III sum of square	Df	Mean square	F	Sig.	Partial Eta squared
Corrected model	29.0200	4	7.255	96.921	.000	.876
Intercept	2.069	1	2.069	27.641	.000	.334
VAR 00001	.002	1	.002	.032	.858	.001
VAR 00003	28.158	3	9.386	125.392	.000	.872
Error	4.117	55	.075			
Total	443.430	60				
Total	33.137	59				
Corrected Total						

a.R Squared = .876 (Adjusted R Squared = .867)

From table 4 above, the f-ratio of significant difference in the scores of treated urban and rural participants is 125.392 which is greater than f-critical ( $f_{3,56}$ ) of 2.76. This implies that there is significant difference in treatment effect based on location (urban and rural). The null hypothesis is thus rejected.

## Discussion of findings

The result as presented in Table 1 portrays as well as establishes the management problems of adult education programme in Nigeria. This is demonstrated by the pre-test scores of participants of our study as shown on the same table. Their responses in all the items in the MPAEPPAQ were above 2.5 mean level. This implies that all the participants in this study were experiencing problems in managing adult education programme in their various local government areas. This corroborates the report of NMEC (2008) on Nigerian adult education programme and that of Akudo (2009). However, at posttest, all the participants in the treatment group have become comfortable with the way forward for the effective management of adult education programme in order to fully equip the students who are the prospective recipients towards poverty alleviation. The change in the views of the participants must have been as a result of the CPMAEP therapy. This was established when the responses of participants in the experimental groups were compared with those of the control group that received no treatment (see table 2).

The findings of this study further show that the guidance and counselling services needed for effective management of adult education for poverty alleviation are orientation, information, appraisal, planning and placement, referral, evaluation and counselling services.

The powerful effect recorded by the therapy is because guidance and counselling services are professional assistance and activities packaged for clients in group and individual bases geared towards achieving the objectives of the school as well as meeting the needs and interests of the students (Chima 2010).

It is also worthy to note that the effect of the therapy notwithstanding, participants were still disturbed about the issues of funding and adequacy of qualified staff. The quality of the adult education facilitators is truly pitiable. The same report by NMEC on Nigerian Adult Education shows that 33.3% of the facilitators possessed only post literacy certificates, 54.5% WAEC/NECO, while 84.8% were Teacher Grade II Certificate holders. The report went further to reveal that between 1997 and 2008, the percentage allocation of fund to Adult Learning and Education ranged between 0.65% - 8.94% of the total allocation of funds available for education.

Evidence from tables 3 and 4 manifested significant difference in the treatment effect based on location (urban/rural). The participants in the urban areas yielded more to treatment effect than those in the rural. This may be attributed to the fact that those in the urban areas are more exposed, challenged and understand better the need for education. They also should have more opportunities of enhancing the quality of the programme through seeking support and self help.

Finally, the views of adult education students through oral interview confirm that if the programme is properly organized, it will help in no small measure in alleviating poverty in Nigeria. This can be achieved by making the programme practical and including creative skills and innovation that will make graduates learn to earn money to meet family and community financial obligations. This justifies the assertions of various researchers that education is a veritable weapon against ignorance, poverty and disease (Adeloye 1999 & Preece 2005).

### **Conclusion and Recommendations**

The study has sufficiently demonstrated the impact of rendering guidance services as treatment package in bringing positive insight to participants towards effective management of the adult education programme. This is expected to produce students who will be so equipped and self sufficient to fight poverty. Based on the above findings, it is recommended that:

1. Professional counsellors be attached to all the adult education centres in all the Local Government Areas in Nigeria.
2. Regular seminars, workshops and conferences be organized for the adult education officers in order to equip them with the various trends to enhance the quality of the programme.
3. Nigerian Government takes seriously the empowerment of its citizens through adult education. This is premised on the fact that education is a potent tool for poverty alleviation.
4. Government also tries as much as possible to maintain adequate funding of the programme as well as enhance the quality of teaching and teaching staff.
5. Adult education to be community based by including special community education programmes such as skill acquisition, entrepreneurial skills and management of small business.

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# Learning English and Indigenous Students' Needs

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## **Abstract**

Looking at in microcosm, English is being taught from standard one through form five in Malaysian schools but the level of proficiency in English is still debatable. According to the Minister of Higher Education of Malaysia, most students who entered public universities have poor knowledge of English. (The Star Newspaper, 27 Jan 2007). Although both the 'intrinsic and extrinsic motivations' have been given, yet the motivations have been unsuccessful in reaching the greater majority. (The Star Newspaper, 6 Mac 1998). And also, the opportunity to use English outside the classroom is limited, and the learner may be easily discouraged. English may be considered a compulsory second language in schools but it is treated as a foreign language. The decline in English proficiency needs to be addressed immediately especially for the indigenous/Orang Asli(OA) students at public universities. Findings of this research provide insights that the OA students perceived firstly reading (56.1 %), followed by speaking (52.5%), then writing (30%) and lastly listening (27.5%) as skills of importance. Reading lecturer's notes is rank first. The students need to be competent in English because most of the lecturer's notes and text books are in English. Students find following lectures, listening to instructions for assignments and giving oral presentations as important language - based tasks that will help them in their other subjects. These language-based skills are important skills which are applicable for all occasions. The OA students enjoy learning English and they wish their English periods can be increased. Thus taking into consideration the current progress of English acquisition and urgency on the need to improve students' proficiency in the language, English language lecturers need to re-orientate or revamp their present courses so that these courses will remain relevant in meeting the academic and social needs of the indigenous students.

**Key words:** :needs, indigenous, urgency, language-based

## Introduction

Looking at in microcosm, English is being taught from standard one through form five in Malaysian schools but the level of proficiency in English is still debatable. According to the Minister of Higher Education of Malaysia, most students who entered public universities have poor knowledge of English. (The Star, 27 Jan. 2007). Although both the 'intrinsic and extrinsic motivations' had been given, yet the motivations had been unsuccessful in reaching the greater majority. (The Star, 6 Mac. 1998). And also, the opportunity to use English outside the classroom is limited and the learner may be easily discouraged. English may be considered a compulsory second language in schools but it is treated as a foreign language. The decline in English proficiency needs to be addressed immediately especially for the indigenous who are known in Malaysia as Orang Asli/OA, students at public universities. Unless and until these Orang Asli (OA) students are proficient in English, they will face difficulties in their studies because most lectures are conducted in English, reference books are in English and information from the internet is in English.

Taking into consideration the current progress of English acquisition and urgency on the need to improve students' proficiency in the language, the following research questions will be investigated:-

- i. How do the indigenous students rate their English language skills?
- ii. What are the important English language-based tasks that the students need for their other subjects?
- iii. What are the students' opinions of the English language instructions at their universities?

Findings of this research will provide insights for English language lecturers need to re-orientate or revamp their present courses so that these courses will remain relevant in meeting the academic and social needs of the indigenous students.

## Review of Related Literature

Before any course is drawn up, a learner analysis has to be made. Nunan (1985:7) justifies needs analysis as 'Pedagogically, the most powerful argument in favour of a needs-based course is a motivational one ... One way of improving motivation is to orientate content towards those areas that most interest learners and which are perceived by them as being more relevant.'

Wilkins (1974:58) however, states that the first principle of sound approach to language teaching is to know what the objectives of teaching are. He mentions it is necessary to predict what kind of language skills will be of greatest value to the learner. So it implies that a preliminary analysis of the learner's needs and expectations will be a prerequisite in any course design whether for general or specific purposes.

Mackay and Bosquet (1981:6) define needs as either real, current needs (what the learner needs the language for now) or future, hypothetical needs (what the learner may want the language for at some unspecified time in the future). Other types of needs would be considered as learner desires (what the student would like to do with the language, independent of the specific requirements of the situation or job for which the needs analysis is being carried out) and teacher-created needs (what the teacher imagines is needed or would like to impose on the learner).

According to Brindley (1989:70) needs can be divided into objective and subjective needs. The objective needs are derived from factual information about the learner and his usage of the language in the real life situation. The learner's current language proficiency and difficulties are taken into consideration. However, the subjective needs refer to the learner's



wants and expectations. These are taken into consideration along with the language learning styles and strategies. Widdowson (1987:97) provides two interpretations to the meaning of 'learner needs.' The first expression refers to what the learner needs to do with the language once he has learned it. This is goal-oriented which refers to needs related to terminal behaviours, the ends of learning. On the other hand, the second expression refers to what the learner needs to do in order to actually acquire the language. This is a process-oriented definition, needs related to transitional behaviours, the means of learning. Mackay and Palmer (1981) found that many well intentioned programs have foundered because either no consideration was given to the actual use the learner intended to make of the language or because the list of uses drawn up by the course designer was based on imagination rather than an objective assessment of the learners' situation, and prove to be inaccurate and in many cases entirely inappropriate to his real needs. From the review of related literature, the researchers gain information on needs analysis and course design which is crucial for this research.

### **Methodology**

The methodology underlying this research is guided by the protocol of Hutchinson and Waters (1987) and refined by Basturkmen (1998) model of needs analysis. It is both qualitative (exploratory interviews, class observations and examination of students' materials) and quantitative through the implementation of structured questionnaire. The researchers believe that information gathered from the questionnaire and triangulated with structured interviews with lecturers at public universities' language centres, will permit considerable insights into the language needs of the participants. Such insights will provide possible recommendations for inclusion in a course design.

From the outset, the researchers have identified 48 O/A students who are studying at public universities in Malaysia. These students need English for academic and social purposes.

The questionnaire meant for the students is adapted along the lines put forward by Basturkmen (1998). The questionnaire is divided into three sections:-

Section I - Background information. This section consists of seven questions. It will yield findings that relate to participants' personal backgrounds.

Section II - Language needs in the university. This section consists of twenty nine questions. Findings from this section will yield insights into the language competencies of participants.

Section III - Opinions about English language instruction in the university. This section consists of twelve questions. Findings yielded by this section will provide information on the participants' opinions on the English language that is being taught.

### **Results**

Research Question 1: How do the OA students rate their English language skills?

Important language skills in order of perceived importance

**Table I: Reading**

		Frequency	%	Valid %	Cumulative %
Valid	1	23	47.9	56.1	56.1
	2	6	12.5	14.6	70.7
	3	8	16.7	19.5	90.2
	4	4	8.3	9.8	100.0
	Total	41	85.4	100.0	
Missing	System	7	14.6		
Total		48	100.0		

**Table II: Listening**

		Frequency	%	Valid %	Cumulative %
Valid	1	11	22.9	27.5	27.5
	2	12	25.0	30.0	57.5
	3	11	22.9	27.5	85.0
	4	6	12.5	15.0	100.0
	Total	40	83.3	100.0	
Missing	System	8	16.7		
Total		48	100.0		

**Table III: Speaking**

		Frequency	%	Valid %	Cumulative %
Valid	1	21	43.8	52.5	52.5
	2	4	8.3	10.0	62.5
	3	11	22.9	27.5	90.0
	4	4	8.3	10.0	100.0
	Total	40	83.3	100.0	
Missing	System	8	16.7		
Total		48	100.0		

**Table IV: Writing**

		Frequency	%	Valid %	Cumulative %
Valid	1	12	25.0	30.0	30.0
	2	10	20.8	25.0	55.0
	3	8	16.7	20.0	75.0
	4	10	20.8	25.0	100.0
	Total	40	83.3	100.0	
Missing	System	8	16.7		
Total		48	100.0		

1 – Most Important 2 – Important 3 – Less Important 4 – Least Important

From tables I to IV, the researchers are able to compare the students' English language skills in their order of perceived importance. It can be seen that the OA students rate firstly reading (56.1 %), followed by speaking (52.5%), then writing (30%) and lastly listening (27.5%). It can be deduced that the students' first choice is reading because competency in this skill will help them comprehend better especially when reference books, articles and journals are in English and also the medium use in the internet is English.

Speaking is perceived as the next important skill because the ability to speak well will help them when asking questions during lecture, answering questions ask by lecturers, making oral presentations and also when attending interviews conducted by the private sector.

Thirdly writing, it can be deduced that the students find writing in English less important for their other subjects because they are allowed to write their assignments and answer questions during examinations in Malay. Again not much writing in English is required for technical reports. For the final examination, students are given the freedom to choose either to answer the questions in English or Malay. Thus writing in English becomes less important.

Lastly, listening which falls into the backstage because lectures are conducted in Malay and English receives its importance when expatriate lecturers use English in teaching. Thus the OA students do not feel the need to be competent in this skill and that is the reason why listening in English is treated as least important.

Research Question 2: What are the important English language-based tasks that students need for their other subjects?

**Table V: Reading Task**

Tasks	Very Important	Important	Not Important	Total Score	Rank
Textbooks	21	24	1	72	2
Articles in journal	18	21	7	81	4
Texts on computer	13	24	9	88	6
Instructions for assignments/ projects	19	25	2	75	3
Instructions of labs	16	22	8	84	5
Lecturer's notes	26	19	1	67	1

The researchers analyze the findings as tabulated in Table V and find that reading lecturer's notes is rank first (score 67). The students need to be competent in English because most of the lecturer's notes and text books are in English especially for students in Universiti Teknologi Mara where the medium of instruction is English. They will lose out if they cannot comprehend reading materials in English that are provided by the lecturers. Thus competency in reading is important for the students' other subjects.

**Table VI: Listening and Speaking Tasks**

Tasks	Very Important	Important	Not Important	Total	Rank
Following lectures	23	21	2	71	1
Following question/answer sessions in class	21	23	2	73	2
Listening to spoken presentations	20	23	3	75	4
Listening to instructions for assignments	20	24	2	74	3
Participating in discussions	18	24	3	75	4
Asking questions in class	16	28	2	78	5
Giving oral presentations	20	24	2	74	3

Table VI shows that secondly following lectures (score 71) and question/answer sessions in class (score 73) as important language-based tasks that will help the indigenous students in their other subjects. These tasks provide sufficient language activities which prepare them for their other subjects. The skills that they acquire are useful and applicable for all occasions.

**Table VII: Writing Task**

Tasks	Very Important	Important	Not Important	Total Score	Rank
Lab reports	15	25	6	83	5
Assignments	20	25	1	73	1
Field-trip reports	15	26	5	82	4
Projects (short)	16	25	5	81	3
Taking lecture notes	19	25	2	75	2

1 – Very Important

2 – Important

3 – Not Important

Looking at Table VII, the OA students find competency in writing assignments (score 73) and taking down lecture notes (score 75) in English will help them in their other subjects. These language-based tasks are perceived by the students as useful exercises that will help them in their other subjects. Some of their major and minor subjects are conducted by expatriates, thus proficiency in writing in English will be an added advantage.

Research Question 3: What are the students' opinions of the English language instructions at their universities?

**Table VIII Students' opinions about English language instruction in university**

	Strongly	Agree	Disagree	Total	Rank
More time should be given to English instruction	12	30	2	78	5
The content of my English course is interesting	8	31	5	85	7
Instruction should focus on English for my specific major	11	29	4	81	6
More should be done to help students in English	16	26	1	71	2
I enjoy my English class	19	24	1	70	1
Having good English is important in university	15	25	4	77	4
Some instructions should focus on needs at workplace (after leaving university)	15	25	4	77	4
English is my least important course	17	26	1	72	3
My English course is easy	5	26	12	93	8
My English course helps me in my subjects	4	24	16	100	9

1 – Strongly agree

2 – Agree

3 - Disagree

From the information gathered in Table VIII, the researchers observe that the OA students enjoy their English classes (rank 1) although they perceive the course as difficult (rank 8). They put English as their least important course (rank 3) and English does not help in their major subjects. However, the paradox is they all agree that having good English is important (rank 4). Three hours of English per week that are currently allocated by the language centres at public universities are insufficient and they suggest more because they need to practise speaking (rank 2).

### Conclusions

The findings of this research shows that indigenous/OA students rate English language skills, in order of priority, firstly reading (56.1 %), followed by speaking (52.5%), then writing (30%) and lastly listening (27.5%). Competency in reading will help them comprehend better especially when text and reference books; articles and journals are in English, and also the medium use in the internet is English. Next is proficiency in speaking because the ability to speak well will help them when asking questions during lectures especially those that are conducted by expatriate lecturers, answering oral questions asked by lecturers, making oral presentations and also when attending interviews by the private sector.

Writing in English is less important for their other subjects because the students are allowed to write their assignments and answer questions during examinations in the national language which is Malay. Again not much writing in English is required for technical reports. For the final examination, students are given the freedom to choose either to answer the questions in English or Malay. Thus writing in English becomes less important.

The OA students do not feel the need to be competent in listening because lectures at public universities are conducted in Malay. Listening receives its importance when expatriate lecturers use English in their teaching. English language skills

Regarding English language-based tasks that students need for their other subjects, the researchers identify firstly reading lecturer's notes (total score 67) because most of the lecturer's notes and text books are in English especially so for students in Universiti Teknologi Mara where the medium of instruction is English. They will lose out if they cannot comprehend reading materials in English that are provided by the lecturers. Reading is important for the students' other subjects

Secondly, following lectures (total score 71) in English will help them in their other subjects because lecturers use English in their teaching especially expatriates lecturers. Thus familiarity of the English terminologies will help the students in their other subjects.

Thirdly, competency in writing assignments (total score 73) and taking down lecture notes in English will help them in their other subjects. These important language-based tasks will help OA students in their other subjects.

On the question of students' opinions in terms of appropriateness of the English language instructions at their universities, the answers given are the OA students enjoy their English classes, in fact they wish their English periods can be increased. They perceive these extra classes will provide them with sufficient oral practice and class participation. The paradox is although they agree that having good English is important in the university yet they treat English as their least important course.

The findings of this research has provided insights for the lecturers who are teaching English whether they need to re-orientate their present courses or design a new curriculum needs to meet the academic needs of the OA students.

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# **“I Beg Your Pardon, I Never Promised You a Rose Garden” An Interpretation of Meaning and Aesthetic in Urban Residential Landscape**

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## **Abstract**

Substantial rural-urban migration in Malaysia in 1971-1975 is underpinned by aspirations for better economic, educational and social opportunities. The shift to an urban area requires adaptation to a totally different environment. The migrants who had earlier lived in squatter settlements continue to practise their local culture and *kampong* (village) values even after they have been relocated to newly planned residential areas. The responsive cultural landscape characteristics that embodied the residents' way of life were disapproved of by the Municipal Council as it reflected the image of a blighted land. The Council prefers to develop homogenous residential landscapes mainly for aesthetic values. This research challenges the idea of aesthetic homogenous landscapes in urban residential areas. The qualitative research approach adopted in this research investigates the conflict between cultural meanings and the aesthetic values embedded in medium-cost urban residential landscapes. The findings of this research reveal that the residential landscape is not just another 'designed space' to be looked at, it is a 'living place' that can help to shape the residents' identities, to fulfill their aspirations and more importantly, to enable them to live without being alienated. This research's findings may help relevant government agencies and industry players to better understand landscape issues and community needs in medium-cost housing, rather than just providing a 'one design fits all' solution.



## 1. Conflicts between Meaning and Aesthetics in Urban Residential Areas

Substantial rural-urban migration in Malaysia from 1971 to 1975 had a great influence on the design of residential neighbourhoods. The migration challenged what was previously accepted as adequate housing during the country's pre-independence and early post-independence years. The New Economic Policy (1971-1990) introduced a 'human settlement concept' with the intention of building a better living environment in which people could live, prosper and develop. Landscape design for residential areas is one of the ways that allows people to live in a pleasing environment. The establishment of the National Landscape Department of Malaysia in 1996, with its mission of "landscaping the nation", led to the formation of a green policy for public spaces in urban residential landscape developments (Sreetheran *et al.*, 2006). These public spaces comprise road medians, neighborhood parks, parking spaces, children's playgrounds and green buffer zones. In general practice, the landscape design of these housing schemes includes medium-size trees, small and medium shrubs and turf planted along the roads and public parks to provide shade and to enhance aesthetic pleasure in the neighbourhoods (Sreetheran *et al.*, 2006). In line with this policy, developers are responsible for providing landscape designs for these public spaces.

Municipal Councils in Malaysia do not regulate the developers' landscaping costs in housing schemes. Landscape submission approval is obtained on condition that developers manage to fulfill their landscape submission requirements. The researcher learned during an interview with the landscape architect of the Subang Jaya Municipal Council that landscape alteration in the semi-public spaces adjacent to the house is lawful as long as it only involves soft landscape changes during a post-occupancy period. These landscape changes are permitted as long as they are not potentially hazardous to the public (Azhar, 2008). The researcher was told that residents are allowed to make changes which will enhance their living settings, provided they do not use any utilitarian plant species such as the *Cymbopogon citratus* (Lemongrass). Residents are likely to be penalised for planting utilitarian plant species in semi-public spaces as that is seen as replicating the rural cultural landscape. The Municipal Council perceived rural cultural landscapes as messy and unorganised, in contrast to the idea of properly planned modern landscape design. The researcher's search through existing literature, together with extensive personal involvement in the field of landscape architecture in Malaysia, enabled her to analyse landscape design plans implemented by developers in medium-cost residential developments. The landscape design of medium-cost housing typically and primarily aims to fulfill the landscape plan submission requirements, also known as the developers' stereotypical landscapes that fail to meet the needs and lifestyles of the majority of the residents who migrated from rural to urban areas.

The study by Said (2001a) suggests that it is a normal and well-accepted phenomenon among residents, during their post-occupancy period to change the public landscape provided. The green buffer zones and other green spaces adjacent to the houses are used to create small orchards with fruit trees such as *Musa spp.* (Banana), *Artocarpus heterophyleus* (Jackfruit), *Nephelium lappaceum* (Rambutan) as well as herbs and spices such as *Capsicum spp.* (Chilli), *Alpinia galanga* (Galangal), *Curcuma domestica* (Turmeric) and *Pandanus annaryllifolius* (Pandanus). Many of the inhabitants of these neighbourhoods construct their personal carports and storage barns in these public areas. In less than a five-year occupancy period, the overall public landscape can change dramatically, replacing the existing landscape that was designed by the landscape architects, approved by the local authorities and implemented by the developers (Said, 2001b). The researcher refers to this adjustment process as the altered landscape.

This research documents, investigates and interprets the meanings and aesthetic values embedded in the altered landscape made by the medium-cost housing residents. This study adopted a post-occupancy evaluation method (POE), a research approach that is aimed at understanding the end-users' satisfaction with regard to the living environment provided. The researcher analysed this phenomenon by doing a cross-comparative study of landscape alterations in this housing scheme, which involved residents of different socio-economic backgrounds. This observation is supported by Said (2001b) who identified significant landscape alteration phenomenon that occurred in medium-cost residential areas. The findings of this study may help relevant government agencies and industry players to better understand the landscape issues and community needs for each of these housing schemes, rather than providing a 'one design fits all' solution.

The issue of 'one design fits all', also referred to as homogenous landscapes, created a sense of placelessness and alienation (Relph, 1976) among the residents. The residents challenged the current landscape practitioners by re-creating their desired home landscapes in the semi-public spaces. The residents also confronted the local authority by re-creating personal landscapes or "defiant gardens" (Helphand, 2006), implicitly informing landscape architects, developers and government agencies that the landscapes provided were meaningless to them. Such findings beg the question: are we, the landscape architects, failing to design landscapes that are sustainable? In addition, should 'residential landscape' be physically part of the National Landscape Policy with its aim of Greening the Nation rather than being only a rhetorical paradox? Furthermore, should the designers and developers who failed to provide a responsive living environment to the community be penalised and have their services discontinued?

Issues of homogenous landscape development in urban residential areas have been debated in various disciplines, especially with the establishment of the "Journal of Place" in 1983 (Jaros, 2007; Sime, 1986). A modern housing development has been described as a soulless sterile community estate, clean and hygienic but lacking vibrancy (Ahmad & Syed Abdul Rashid, 2005). The attitudes of local developers who are inclined to imitate 'western' architectural and landscape design, have implicated negatively on the social and cultural lifestyles of modern communities (Rashdi, 2005). According to Rashdi, negative implications include the loss of traditional identity in architectural structures and more importantly, a sense of 'alienation' in our own living spaces. Thus, this research is a call to the local landscape architects and need the appeal so eloquently voiced by Sime (1986), that is:

*The architects [should get] out of 'their' buildings and some psychologists [should get] out of 'their' experimental laboratories from which either the people or physical environment, respectively, have for so long been metaphorically excluded*

*(Sime, 1986, pp. 49-50)*

## **2. Homogenous Landscapes in Medium-Cost Urban Residential Area**

Some medium-cost residential landscapes are endowed with comprehensive networks of green spaces. A developer would normally enhance the overall characteristics of the housing environments as uniquely designed residential neighbourhoods, followed by extensive green buffer zones, children's playgrounds and public recreational facilities comprising a community centre. All these areas are given special attention since an impressive façade promotes the developer's identity and its level of competitiveness. The research by Ezeanya (2004) revealed that developers constructing impressive medium and high-cost residential areas make an effort to construct a 'western image' in their property development, from the housing planning layout

to the dwelling and landscape designs. Rashdi (2005, p. 18) refers to the impression of homologous modern residential estate as a 'forced architectural identity' prescribed by the client with their 'manufactured fantasies'.

The existing landscape designs of the semi-public spaces in medium-cost housing in Malaysia can be interpreted as 'beautifying works', which reflects the ignorance of the developers, the government and the landscape architect regarding the importance of these spaces in promoting social coherence in neighbourhoods. Single ornamental trees with turf as ground cover, as shown in Figure 1.0, produces a dull, homogenous and unimaginative appearance that does not motivate residents to engage in outdoor activities in the public spaces and they instead prefer to spend home-time indoors (Rashdi, 2005). The upper social status of these residents encourage them to spend their outdoor recreational activities in places away from their housing areas, such as in the shopping complexes, cinemas and paid recreational theme parks rather than spending time with their residential communities. The architectural design of the housing units, with fences surrounding the dwellings, discourage the residents from getting to know their neighbours well. Indeed, the residents silently compete among themselves for who will build the tallest concrete fences and impressive gates to reflect their social status, creating a personal, exclusive and unfriendly environment (Rashdi, 2005) .



**Figure 1.0 : Unimaginative urban residential landscape**

Rashdi (1999) in his other book, *Peranan, Kurikulum dan Rekabentuk Masjid sebagai Pusat Pembangunan Masyarakat* presents the idea of the "individualistic modern Malaysian community". According to Rashdi (1999), the life of the modern Malaysian community is strongly assimilated with a western culture that does not encourage feelings of 'brotherhood'. The challenging and demanding cost of living in the urban areas has resulted in the medium-cost communities spending more time in their work places, working hard for better living standards and higher social status. House renovations and landscape alterations in semi-public spaces are symbolic of the residents' economic achievements and desire to build the grandest house in the neighbourhood. Their altered gardens in the semi-public spaces are designed according to trendy landscapes that are seen as being able to highlight their social status and display their personalities and identities (Rashdi, 1999).

The residents' efforts in renovating their houses and landscapes relate to Thwaites' (2001) notion on identity. The 'sense of identity', says Thwaites, derives from 'thematic continuity within variety' which applies to the neighbourhood areas. This means that "touches

of personalization can contribute to the balance of variety and diversity, and therefore the differentiation of neighbourhoods” (Thwaites, 2001). Most importantly, this phenomenon expresses a rejection of a ‘homogenous landscape’ in an urban environment that is typified by uniformity, characterlessness and illegibility as initiated by the Municipal Councils in Malaysia.

### 3. 3.0 The Importance of Responsive Residential Landscapes

The researcher’s previous research (Ismail, 2003) in rural residential areas reveals that the residential landscape means more than merely planting ornamental trees. Orians (1986) explains that residential areas promote certain feelings that reflecting human adaptation to the spaces, creating a responsive living environment. This responsive environment is a space for inhabitants to express their physical activities, emotions, and social and cultural demands as illustrated in Figures 1.2, 1.3, 1.4, and 1.5.



Figure 1.2: Children playing in rural landscapes

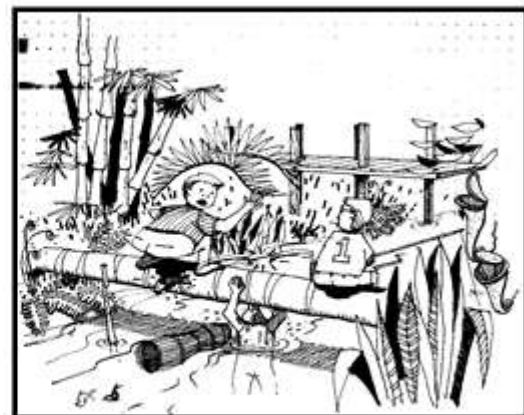


Figure 1.3: Nature that promises excitement



Figure 1.4: Boundless nature promises tremendous experience in the culturally responsive landscape in Perak



Figure 1.5: Examples of interaction between man and environment

Landscape architects in western countries however, have generally shown little interest in creating this type of living ambience (Thwaites, 2001). Similarly, Gillette provokes discussion with the question “*Can Gardens Mean?*” (Gillette, 2005, p. 85). She suggests that the current public landscape developments are “incapable of meaning anything or anything much” because “the garden designers express complex ideas using only the garden which is certainly very difficult for an audience to ‘read’”. She further explains that a public garden

should be more than those gardens usually described in novels, “which must mean because they have no other function” (Gillette, 2005, p. 85). Both Thwaites (2001) and Gillette’s (2005) ideas on the importance of meanings associated with landscape influenced the researcher’s desire to explore landscape alteration in medium-cost urban residential areas.

The residential landscape can be perceived as an expression of the intrinsic and cognitive values of the relationship between humans and their living environment (Said, 2001a). As an example, the Malay rural cultural garden reveals the significant intrinsic and cognitive values of the Malays through the garden’s functional characteristics such as providing of food, medicine, cosmetics and shade. The importance of an intimate relationship between humans and gardens in residential areas has also been suggested by Proshansky, Ittelson and Rivlin (1970) who introduced the idea that landscape sometimes represents human personality and behaviour. Larsen and Harlan (2006), who conducted a study in Phoenix, Arizona, also suggested that personal gardens are the representation of social class, preference and behaviour.

Further, landscape is understood to enhance community identity and reflect its cultural heritage “linking the past with the present” (Gurstein, 1993; Stewart, Liebert, & Larkin, 2004, p. 316). Consistent with this, urban designer Gurstein (1993) recommended that ‘cultural planning’ should create a sense of community, by utilising the physical arrangement and composition of the space. He noted that the physical environment can nurture a sense of community.

The ‘Garden Nation’<sup>1</sup> vision contained in the National Landscape Department of Malaysia lists formal criteria relating to the residential development process which requires the landscape consultant, on behalf of the developer, to submit a landscape design plan to be approved by the respective local council. This procedure must be carried out before landscape works can be implemented in residential areas. As discussed previously, the basic landscape layout usually consists of typical trees planted for the purpose of aesthetic pleasure and shade around the green networks, and some elaborate design in the neighbourhood park.

A study by Said (2001a) showed that in less than five years of the post-occupancy period, existing landscapes were subjected to considerable alteration by the residents in their desire to re-create personal landscape images. Research by Salleh (2008) on residential satisfaction reinforces Said’s findings by revealing that communities alter their everyday landscapes for a variety of reasons, including living standards, social class, taste, preference and identity. This ‘personal landscape’, also known as ‘the altered landscape’, is understood to correlate with the residents’ social status. The changes made by the residents include replacing the existing ornamental plants with another species in accordance with their personal preferences and tastes, while at the same time personalising the adjacent road median (outside their fences). Some members of the Chinese community will use this space to place their religious red altar and burn incense, especially in the late afternoon (Said, 2001a).

Landscape alteration in urban housing in Malaysia can be interpreted through the theoretical lens of ‘placelessness’ (Relph, 1976). El-Shafie explained ‘placelessness’ as one of the negative impacts of globalisation and modernisation, where places and spaces have become uniform. Watt (1982, p. 67) names this condition ‘overgeneralisation’. He argued that “textural and cultural diversity has declined in our cities, whether you compare different parts of the same city or different cities in different countries”. Werlen (1993) associated this phenomenon with ‘homogenisation’, described as ‘common characteristics’. These uniform spaces are not

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<sup>1</sup> The ‘Garden Nation’ vision is for a balance between the economic, physical, social and environmental development of the country, in order to harmonise and ensure a conducive, safe, healthy and beautiful environment for the people to live in (Government, 1999).

conducive to creating a sense of place, community, neighbourhood and more recently, social sustainability (Al-Hathloul & Mughal, 1999; Hargreaves, 2004; Walmsley, Lewis & Walmsley, 1993). 'Homogenisation' leads to feelings of dissatisfaction in the living environment (Clark & Ledwith, 2006). Clark and Ledwith (2006), in their research on residential mobility, highlighted that place alteration is an alternative way for people to create their preferred living space.

Placelessness, overgeneralisation, homogenisation and common characteristics of the residential landscape are possible reasons that drive landscape alteration phenomenon that is taking place in the urban housing areas in Malaysia. Dissatisfaction with the outdoor living environment may arise due to a discrepancy between government policy and user needs. In general, the landscape guidelines prepared by the National Landscape Department focus on the ornamental plant species to be planted around the housing scheme.

In short, the above arguments suggest an incompatibility in the approaches and desired outcomes of policy makers, industry players and residents:

- the policy makers (government) who, in their eagerness to provide physical structure, have failed to address the social and cultural needs of the community;
- industry players (developers and landscape architects) who ignore the importance of creating a responsive landscape as there is little investment return, and
- the end-user who seeks a responsive residential landscape that is more than just planted ornamental trees.

#### **4. Materials and Method**

Landscape alteration in medium-cost housing areas in Malaysia is a dynamic phenomenon. The landscape elements change through time, expressing personal preferences and needs while reflecting the community's cultural articulation of their living settings. Landscape alteration is performed by the communities during the post-occupancy period; it portrays a relationship between humans and the environment. With this understanding, the researcher chose to engage with the post-occupancy evaluation approach, also known as the POE method. This method enabled the researcher to undertake a systematic evaluation of opinions and preferences relating to the responsive residential landscape settings.

This data collection method has been used over the past quarter-century and is able to provide "useful feedback on building and building-related activities...after a defined period of use such as 12 months to 2 years" (Carthey, 2006, p. 60). The post-occupancy method is "recognized and valued as a process that can improve, and help explain the performance of the built environment" (Rabinowitz, 1989, p. 9). White (1989, p. 20) suggested a significant paradigm shift of post-occupancy research from "the evaluation of buildings to service to the client".

The aim of this study is to understand the landscape alteration process and outcomes in medium-cost housing schemes. The researcher adopted a qualitative research approach because this enabled her to interact with respondents and investigate human events and activities in their natural settings. Pitt (1985) supported this approach by saying that the qualitative model is one of the best methods for research in the areas of conservation and environmental planning. Scholars in social anthropology share the same opinion. They believe that this method enables the researcher to engage in 'close participant observation' and to grasp 'more readily both the reality of life and the cultural context' (Lofland, 2006, p. 18).

Technically, this research was conducted in the everyday landscape setting in medium-cost housing in Bandar Kinrara in Selangor, Malaysia. As it may take some time for landscape alteration to establish, the residential areas in which this case study was based had been inhabited by the community for at least five years. This timeframe allows for significant

landscape alteration to have been initiated (Said, 2001). The availability of landscape submission plans from the local authorities played a significant role in this study. Landscape plans, which were submitted by the landscape consultant to the local authorities as part of the process of obtaining project development approval, provided the researcher with evidence of the existing landscape characteristics of the residential areas.

During the researcher's first visit, she sketched the landscape plan of the residents' semi-public spaces in a note book, took photographs and set appointments for the interview sessions at a time convenient to the residents. The sketches and photos were digitally documented using Microsoft Publisher software and printed out on A3-size coloured plan drawings, together with photographs as shown in Figure 1.6. The researcher classified these plans as inventory plans. This approach is referred to as 'observing physical traces' (Walker, 1985).

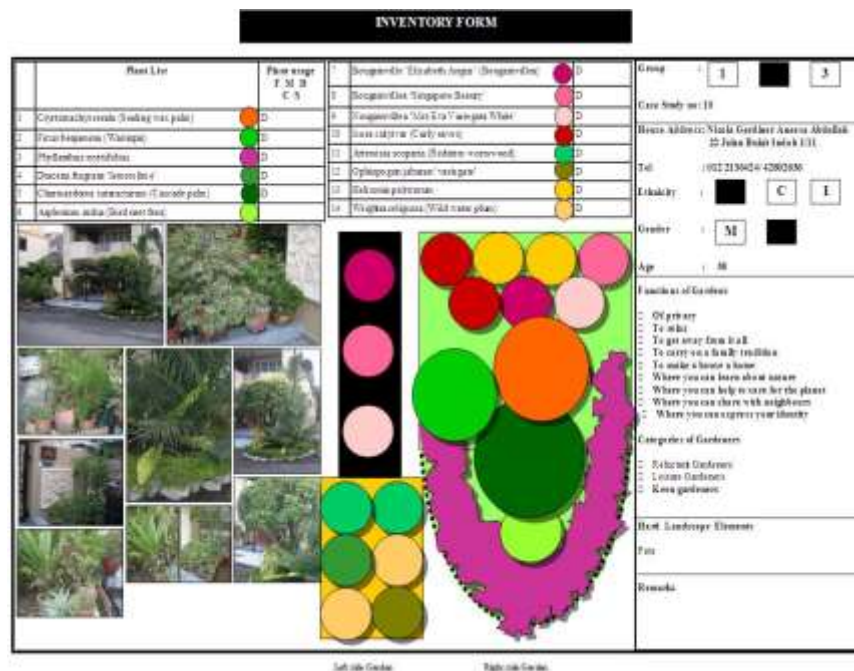


Figure 1.6 : Inventory plan documenting landscape alteration made in the semi-public space.

In-depth interviews (complemented by landscape plans and photos) were carried out with the three parties; namely the policy-makers (Subang Jaya Municipal Council), the landscape architects who were involved in producing the landscape submission plans, and the rural migrants who live in the case study areas. Following consent from participants, all the interviews were tape-recorded and the researcher also took notes of the respondents' non-verbal expressions (for example, pointing towards plant specimens).

The qualitative methods applied in this study were inspired by 'grounded theory', which Glaser and Strauss (1967, p. 1) describe as a method of 'discovery of theory from data'. This study, however, was not designed and conducted to generate a 'sociological theory'. As Glaser and Strauss mentioned, "only sociologists are trained to want it, to look for it and to generate it" (1967, p. 7). Applying a grounded theory approach in this study has helped the researcher to strategise her fieldwork investigations, "grounding them in the everyday realities and meanings of social worlds and social actors, rather than taking problems from policymakers, general theorists, or others" (Coffey & Atkinson, 1996, p. 5). The tape-recorded interviews with the participants were transcribed along with the data collection procedures. The next analytical process involved a coding process to identify key themes and patterns in this study. The bulk of the data was organised by creating categories such as reasons for removing the existing trees,

attachment to garden, land ownership and social expression. The coding process helped the researcher to create patterns and links between categories, supporting further analytical thinking towards establishing the conceptual themes of this study which, in turn, frame the discussion of research findings.

### **5. Meaning and Aesthetic Values of the Altered Landscape in Medium-Cost Housing**

Landscape architecture is considered an emerging profession in Malaysia. These days, landscape work is concerned with more than plants and gardens. The profession in Malaysia now contributes substantially to the planning and designing of social places such as parks, urban spaces and waterfront designs, and to the conservation and preservation of natural distinctive sites. Through the researcher's personal work experience in this field in Malaysia, she observed that most landscape architects feel uneasy about being strongly affiliated with residential design, leaving the majority of this gardening work to be performed by the contractors. The local landscape industries in Malaysia are currently focusing on substantial landscape projects, which are developed and funded by the Malaysian National Landscape Department, aimed at producing gentrified landscape designs for public recreational parks. Landscape consultants are also involved with many local and international landscape projects for urban and industrial development offered by private developers, leaving the residential landscape design as a less important area of practice.

The majority of the participants in this study came from a rural setting. They spent their childhood in the village and migrated to the urban areas for economic and educational reasons, especially during the Malaysia National Economic Plan in 1970. The memory of the rural landscape is important to the rural-urban migrants. Maliki (2008) and Thompson (2003) described a strong attachment between migrants and their rural environment, something (Relph, 1976, p. 37) described as a sense of 'rootedness'. Bunnell (2002), on the other hand, described the negative aspects of *kampong* lifestyle and behaviour that were imported by migrants to the urban living environment.

Data analysis confirmed that these newly developed landscapes or altered landscapes were utilised as one of the platforms to express residents' 'passive resistance' (Helphand, 2006, p. 98) towards the idea of "placelessness" (Relph, 1976). That study showed that residents gardened without any professional landscape or horticultural qualifications. The inspiration to keep nurturing these natural elements in their altered gardens was driven by their childhood experiences and memories of the village they brought with them into the urban settings. These life experiences, referred to as *kampong* conduct by Bunnell (2002) provided physical and spiritual comfort for the residents as they adapted to the urban lifestyle and its challenges. The process of creating altered gardens was one of the ways in which the residents could develop habitable spaces where design was not judged solely on exclusive appearance or content (Grampp, 2008, p. xiii). Thus, this study aimed to explore the meanings and values ascribed by the residents to their everyday landscapes and to argue for the need to move beyond the superficial approaches often employed by professional landscape architects who consider aesthetics but ignore meaning (Gillette, 2005).

During the interviews, the residents described their process of appropriating these spaces. The majority of them were inspired to create altered gardens in conjunction with their personal gardens after observing the unhealthy condition of the existing shade trees. They criticised the respective authority for their poor maintenance of these spaces. As a result, the residents voluntarily took charge of these areas, justifying their actions by stating that the land was located adjacent to their residential units and it was their responsibility to ensure its neatness and pleasant appearance. The majority of the residents started to make changes to their 'inhabitable' semi-public spaces during the first year of their post-occupancy period. Some of



them had even started at the beginning of their stay, they had envisioned their garden accommodating some native and aesthetic plant species long before they moved into this newly developed residential area. This situation signified the residents' desire to create place identity and expressed their response to the homogenous residential settings. The significance of developing place identity was explained by Krupat (1983, p. 343):

*The concept of place identity makes explicit the key role that a person's relationship to the environment plays not simply in terms of a context or action or in facilitating certain forms of behaviour, but in becoming 'part of the person' or being incorporated into one's concept of self.*

*(Krupat, 1983, p. 343)*

While Krupat (1983) admitted that environmental psychologists usually reject the idea that place identity is 'coherent and integrated' with a person's self-identity, he himself could see the importance of place identity acting as a role of 'self-expression' in environmental design. Indeed, he suggested that this idea be further developed by architects and planners. The findings of this study, where the majority of the residents expressed their identities through plant selection compositions in the garden, support Krupat's ideas. The Malay, Chinese and Indian respondents created their own particular gardens which reflected their social behaviour and these gardens were imbued with cultural significance and religious value. In fact, they were proud to be identified with their gardens as an expression of their particular culture and to share their garden produce with all the neighbours, regardless of their ethnicity.

The majority of the residents in the medium-cost housing had two types of gardens, as shown in Figure 1.7. The first garden was identified as a personal garden, created on their private property. The second or 'Extended Garden' was located in the semi-public spaces. The residents' personal gardens included potted plants, water features and seating areas. They normally utilised this area for relaxation purposes, especially during the day and usually converted this space into their carport during the night. For these reasons, the residents preferred to have this space completely paved to allow free circulation and movement. This paved potted garden is the place they use to get together with their family members, having such as afternoon tea while experiencing the soothing sounds of water flowing in the ponds, within the secluded, gated property that cannot easily be viewed from the outside by any hostile observer.

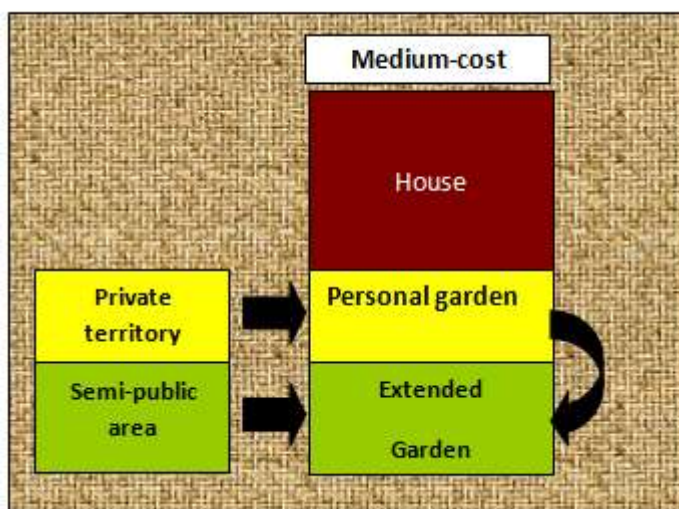


Figure 1.7: Semi-public spaces in urban residential areas are utilised as extended landscapes.

This researcher also found that the medium-cost housing residents appropriated the semi-public spaces mainly as extensions that are closely linked to their personal gardens. The interconnections were expressed by the use of plant materials. For example, Muslim residents developed lush gardens as one of the ways to get closer to God. At the same time, these gardens functioned as a 'green wall', created by using a vertical composition of plants in the altered garden. This green wall provided a physical barrier to establish secluded spaces which, in turn, created a sense of privacy for the personal garden. A sense of privacy is thus a crucial principle, applicable not only to the indoor Muslim house layout as discussed by El-Shafie (1999), but also to their urban garden design. This interconnection between the personal and extended gardens provided both tangible and intangible benefits. The residents explained that they felt good when viewing the greenery and sweet flowers blooming in both of these gardens, listening to the birds singing through the windows, especially in the early morning before commencing a productive day.

A study of the medium-cost residential areas revealed that the majority of residents have conducted significant garden activities in the semi-public spaces, which this researcher also referred to as their extended gardens. Holmes *et al.* cited historian David Goodman who said that "garden became a metaphor for all qualities middle-class reformers wished to encourage among the labouring classes – industriousness, thrift, marital stability, home ownership" (2008, p. 18). The residents of the medium-cost residential areas aspire to create beautiful gardens that are imbued with meanings and aesthetic values that reflect their identity, social status and desire to have the most flourishing garden in their neighbourhood as illustrated in Figure 1.8 and 1.9.



**Figure 1.8 and Figure 1.9: A combination of various plant species reflecting identity and soul in the garden.**

The altered gardens belonging to the medium-cost residents were primarily structured with two types of expensive palm species, namely the *Chrysalidocarpus lutescens* (Yellow Cane Palm) and *Chrystostachys lakka* (Sealing Wax Palm), and then adorned with other varieties of ornamental species, as listed in Appendix III. The Chinese community believed that these two species symbolised auspiciousness and prosperity. Having them planted in the extended garden, which was also the entry point into the property is believed to influence positive energy flow into the house (Said, 2001b). The Malay and Indian communities also cultivated these plants but for different reasons. They were captivated by the uniqueness of the species and considered that ownership of these expensive plants was a way to exhibit their high social status. One of the respondents in fact, proposed that these palms be planted in the semi-

public spaces instead of ornamental trees. She regarded them as plants with high aesthetic values and require little maintenance, suitable for the busy lifestyles of the residents of the medium-cost houses. Findings of this study also provide evidence that these two species embody the phenomenon of trans-cultural assimilation, they were planted and favoured by the various ethnic groups, in contrast to Said's (2001) suggestion that these two species were favoured only by the Chinese residents.

The residents kept improving and enhancing their gardens with the latest species available in the nurseries. For example, there were times when *Bougainvilleas spp.* was popular among the residents and everyone tried their best to cultivate the most outstanding Bougainvilleas. At other times, *Dracenea spp.* adorned the gardens, including *Asplenium nidus* and *Dieffenbachia spp.* This shared passion resulted in a strong bonding and feeling of closeness among the residents. Gardens were a conversation piece; they were the 'glue' that brought the residents together.

This researcher was intrigued by the ways in which the gardens reflected the residents' past experiences and deep emotions. A few residents offered the researcher some poignant personal stories, such as that some of the plants in her garden were in memory of the residents' good friend who had passed away after suffering from breast cancer. She nourished these plants as if she were nurturing their timeless relationship. Similarly, elements in another garden reflected the yearning of a son for his deceased mother. The late mother, who depended on him to continue to care for her garden while she was ill, influenced him to become a keen gardener. She inspired him to create a beautiful garden and tending the garden was perceived as a continuation of routines that started when she was alive. Today, his garden is considered a 'conversation piece' and as one of the outstanding gardens among the neighbours. He even has friends who consider him a 'garden designer' and request his advice for 'garden make-over's, giving him personal satisfaction and encouragement.

The findings of this study also show that residents re-created their gardens in association with a past rural lifestyle. Elements such as a medium-size *Bambusa vulgaris* or a Striped Bamboo were used to replace the Giant Bamboo usually found in the village. The residents collected antique hard landscape elements from the village, such as clay pots and vases, timber seating and woodcarvings, and incorporated these in their gardens, reflecting personal preferences, but also expressing connections with memorable rural environments. The utilitarian species were, however, becoming secondary. The residents normally located their potted herb plants at the back of the garden and sometimes in between other ornamental plants. Some of them admitted that they really needed these plants for their kitchens but preferred to position the pots in their small backyard areas.

The majority of the residents in medium-cost housing schemes owned both personal and altered gardens. The personal gardens located in their carport areas, were known as carport gardens. The surface of the carport gardens were normally paved so that they could be used for outdoor gatherings. The carport gardens were embellished with potted plants, indicating the multiple functions of the spaces. However the residents grew plants in the ground in their altered gardens, reflecting their physical and emotional dependence on the garden. This study indicated that the residents' altered gardens provided more meaningful experiences than their personal garden. Thus, the altered garden was perceived as their primary garden while the personal garden became secondary. The altered garden was the repository of memories. Complex varieties of soft and hard landscape elements signified a desire to own these altered gardens. This researcher refers to the altered gardens of the residents of the medium-cost housing schemes as 'invulnerable gardens', that is, gardens which stood on their own and resisted potential legislative orders from the Municipal Council. The residents believed that

their extended gardens added value to the overall landscape in the medium-cost housing areas. In fact, they considered their efforts in beautifying the semi-public spaces as assisting the local authority to properly manage these spaces, rather than leaving them unattended. Figure 1.10 and Figure 1.11 illustrate the meaningful characteristics of altered gardens belonging to the residents of the housing areas.



Figure 1.10: Typical flower garden in medium-cost Housing



Figure 1.11: Gardening is more than a physical activity. It connects the resident's spirituality with the Creator.

## 6. Conclusion

This research has provided evidence of how the majority of rural-urban migrants, as the end-users of urban housing developments in the Malaysian urban context, contested the idea of the homogenous landscapes provided by developers by developing their personal altered landscapes. This conflicting situation between the needs of the residents for meaningful utilitarian landscapes and the approach of the local authority and the designers who are keen to provide aesthetic and stereotypical landscapes should be seen as one of the challenges for landscape architects and other built environmental designers.

This is a reminder to the researcher and her colleagues in this profession that as landscape architects we are ethically responsible for community needs. Landscape is not a two-dimensional art piece. Landscape comprises habitable places and it ought to support the well-being of human. As Tuan said:

*A poem or an essay is not itself an important element in our surrounding. By contrast, a building is. A designed landscape is indeed an all-encompassing milieu. Architecture, unlike literature, can affect our senses directly. It influences us by simply being there, bypassing the necessity to stimulate the active cooperation of the mind.*

*(Tuan, 1979, p. 97)*

Inspired by Tuan's observations, this researcher suggests that landscape projects should do more than reflect the professional's personal creativity or aesthetic values. The real challenge for us in an era of globalisation is to be creative designers and resolve site design problems, as well as being sensitive to vernacular meaning and values (a sense of place) in a way that provides for the social well-being of the users. This paradigm shift can also help to transform the current image of the landscape architecture profession in Malaysia, which is

known to prioritise physical landscape appearance, into a profession that is able to support our government's mission to foster social and ethnic integration in Malaysia through sustainable landscape design. As landscape architect Jane Gillette articulated, the professionals should focus on "shifting the production of meaning from designers to the audience" (Gillette, 2005, p. 91).

This researcher recommends that sustainable residential development should become part of the Landscape Policy of the National Landscape Department of Malaysia. 'Greening the Nation', a landscape policy associated with planting more trees in public green spaces and the re-development of urban public and recreational parks, should also consider greening and giving meaning to the residential landscapes as part of its objectives. Residential areas should be considered as part of a total urban living environment. Having a sustainable landscape policy implemented for urban residential areas is also one of the ways to curb the 'greed' of developers for making substantial profits without considering community and social development.

In conclusion, landscape architects and developers may not promise to plant rose gardens, but taking steps to nurture residents' personal garden may develop a much more meaningful relationship between plants and human being.

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# Application of Scheduling in Low-Volume Systems Services

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## **Abstract**

Scheduling involves the timing and coordination of operations. Such activities are fundamental to virtually every organization. Scheduling problems differ according to whether a system is designed for high volume, intermediate volume, or low volume. Scheduling problems are particularly complex for job shops (low volume) because of the variety of jobs these systems are required to process. The objective of this study is to describe the heuristic methods of achieving trade-off among conflicting goals, which include scheduling hospital operating rooms and classroom timetable of a university for a week in low-volume systems (Job shop). Gantt load charts were used to visualize workloads monitor and track the trend of activities. It was thus concluded that Gantt charts accurately represent the cost, time and scope aspect of a project, but the problem of complexity in the heuristic process can be successfully handled by using computer software packages designed for offering Gantt chart functionality in low volume systems services.

**Keywords:** Loading, Sequencing, Schedule Chart, Volume of operations

## 1. Introduction

Scheduling deals with establishing the timing of the use of equipment, facilities, and human activities in an organization. It occurs in every organization, regardless of the nature of its activities. For example, manufacturers must schedule production, which means developing schedules for workers, equipment, purchases, maintenance, and so on. Hospitals must schedule admissions, surgery, nursing assignments, and supporting services such as meal preparation, security, maintenance, and cleaning. Educational institutions must schedule classrooms, instruction, and students. And lawyers, doctors, dentists, hairdressers, and auto repair shops must schedule appointments.

In the decision-making hierarchy, scheduling decisions are the final step in the transformation process before actual output occurs. Many decisions about system design and operation have been made long before scheduling decisions. They include the capacity of the system, product or service design, equipment selection, selection and training of workers, and aggregate planning and master scheduling. Consequently, scheduling decisions must be made within the constraints established by many other decisions, making them fairly narrow in scope and latitude. Effective scheduling can yield cost savings and increases in productivity. It also can yield other benefit, for example, in hospitals; effective scheduling can save lives and improve patient care. In educational institutions, it can reduce the need for expansion of facilities. In competitive environment, effective scheduling can give a company a competitive advantage in terms of customer service (shorter wait time for their orders) if its competitors are less effective with their scheduling (Stevenson, 2009).

Scheduling tasks are largely a function of the volume of system output. High-volume systems (flow shop scheduling) requires approaches substantially different from those required in low-volume systems (job shop scheduling), and project scheduling (intermediate-volume systems) requires different approaches. High-volume systems are characterized by standardized equipment and activities that provide identical or highly similar operations on customers or products as they pass through the system. Examples of high-volume products include autos, personal computers, radio and televisions, toys, and appliances. In process industries, examples include petroleum refining, sugar refining, mining and so on. Examples of services include cafeteria, news broadcasts and mass inoculations. Intermediate-volume system outputs fill between the standardized type of output of the high-volume systems and make-to-order output of the job shops. Like the high-volume systems, intermediate-volume systems typically produce standard outputs. If manufacturing is involved, the products may be for stock rather than for special order. Thus, intermediate-volume work centres periodically shift from one job to another. Companies engaged in producing processed rather than assembled goods (for example, food products, such as canned goods and beverages, publishing, such as magazines, paints and cleaning supplies). The features of low-volume systems (job shops) are considerable different from those of high and intermediate-volume systems. This is because, products are made to order, and orders usually differ considerably in terms of processing requirements, materials needed, time and processing sequence and setups. Thus, job-shop scheduling is fairly complex and it processing gives rise to two basic issues of how to distribute the workload among work centres and what job processing sequence to use. The trust of this study thus, is to describe with suitable illustrations the heuristic methods of achieving trade-offs among conflicting goals, which include scheduling hospital operating rooms (surgery) and classrooms timetable scheduling of a university for a week in low-volume systems.

## 2. Conceptual Clarifications

### 2.1: Operating Room Scheduling and Planning

The managerial aspect of providing health services to patients in hospitals is becoming increasingly important. Hospitals want to reduce costs and improve their financial assets, on the one hand, while they want to maximize the level of patient satisfaction. One unit that is of particular interest is the operating theatre, since this facility is the hospital's largest cost and revenue centre (HCFMA, 2005 and Macario, et. al., 1995), it has a major impact on the performance of the hospital as a whole. Managing the operating theatre, however, is hard due to the conflicting priorities and the preferences of its stakeholders (Glauber and Mintzberg, 2001), but also due to the scarcity of costly resources. Moreover, health managers have to anticipate the increasing demand for surgical services caused by the aging population [Etzioni, et. al., 2003]. These factors clearly stress the need for efficiency and necessitate the development of adequate planning and scheduling procedures.

In the past 60 years, a large body of literature on the management of operating theatres has evolved. Magerlein and Martin (1978) review the literature on surgical demand scheduling and distinguish between advance scheduling and allocation scheduling. Advance scheduling is the process of fixing a surgery date for a patient, whereas allocation scheduling determines the operating room and the starting time of the procedure on the specific day of surgery. Przasnyski (1986) structures the literature on operating room scheduling based on general areas of concern, such as cost containment or scheduling of specific resources. Other reviews, in which operating room management is covered as a part of global health care services, can be found in (Boldy, 1976; Pierskalla and Brailer 1994; Smith-Daniels et. al. 1988 and Yang, et. al., 2000).

This review provides an overview on operating room planning and scheduling that captures the recent developments in this rapidly evolving area. In order to maintain a homogeneous set of contributions, we do not enlarge the scope to operating room management and hence exclude from this review topics such as business process reengineering, the impact of introducing new medical technologies, the estimation of surgery durations or facility design. In other words, we restrict the focus to operating room capacity planning and surgery scheduling (timetabling).

Two major patient classes are considered in the literature on operating room planning and scheduling, namely elective and non-elective patients. The former class represents patients for whom the surgery can be well planned in advance, whereas the latter class groups patients for whom a surgery is unexpected and hence needs to be performed urgently. The literature on elective patient planning and scheduling is rather vast compared to the non-elective counterpart. Although many researchers do not indicate what type of elective patients they are considering, some distinguish between inpatients and outpatients. Inpatients refer to hospitalized patients who have to stay overnight, whereas outpatients typically enter and leave the hospital on the same day. Adan and Vissers (2002), for instance, consider both inpatients and outpatients in their research. They formulate a mixed integer programming model to identify the cyclic number and mix of patients that have to be admitted to the hospital in order to obtain the target utilization of several resources such as the operating theater or the intensive care unit (ICU). In their case, outpatients are treated as inpatients with a length of stay of one day who do not necessarily need specialized resources such as the ICU. When considering non-elective patients, a distinction can be made between urgent and emergent surgery based on the responsiveness to the patient's arrival (i.e. the waiting time until the start of the surgery). Whereas the surgery of emergent patients (emergencies) has to be performed as soon as possible, urgent patients (urgencies) refer to non-elective patients that are sufficiently stable so that their surgery can possibly be postponed for a short period. Wullink et al.(2007), for

instance, examined whether it is preferred to reserve a dedicated operating room or to reserve some capacity in all elective operating rooms in order to improve the responsiveness to emergencies. Using discrete-event simulation they found that the responsiveness, the amount of overtime and the overall operating room utilization significantly improved when the reserved capacity was spread over multiple operating rooms. Bowers and Mould (2004) group orthopaedic urgencies into trauma sessions and use Monte-Carlo simulation to determine which session length balances the amount of session overruns with an acceptable utilization rate. They furthermore provide both a discrete-event simulation model and an analytical approximation to explore the effects of including elective patients in the trauma session.

Various criteria are proposed to evaluate the performance of the planning and scheduling methods. One common evaluation measure relates to the waiting time of patients or surgeons. Denton et al. (2007), for instance, examine how case sequencing affects patient waiting time, operating room idling time (i.e. surgeon waiting time) and operating room overtime. They formulate a two-stage stochastic mixed integer program (MIP) and propose a set of effective solution heuristics that are furthermore easy to implement. Note that patient waiting time may also be interpreted as the stay on a surgery waiting list. As illustrated by VanBerkel and Blake (2008), this issue is closely related to throughput analysis. In their study they use discrete-event simulation to examine how a change in throughput triggers a decrease in waiting time. In particular, they affect throughput by changing the capacity of beds in the wards and by changing the amount of available operating room time. Note that their operating theatre of interest is spread over multiple sites, which is rare in the literature.

The utilization of resources is a second performance measure, next to waiting time, which is well addressed in the literature. Especially the utilization rate of the operating room has been the subject of recent research. (Dexter, 2003; Dexter and Epstein, 2003; Dexter and Epstein, 2005; Dexter and Macario, 2004; Dexter and Traub, 2002; Dexter, et. al. 2003 and Dexter, et. al., 2007) evaluate procedures based on the OR efficiency, which is a measure that incorporates both the underutilization and the overutilization of the operating room. Utilization actually refers to the workload of a resource, whereas undertime or overtime includes some timing aspect. It is hence possible to have an underutilized operating room complex, although overtime may occur in some operating rooms. Consider, for instance, two operating rooms with a daily capacity of 4 hours. When we assume that operating room 1 (room 2) has a surgical workload of 2 (5) hours, only 7 out of 8 operating room hours are used. Although this operating theatre is underutilized, one hour of overtime in operating room 2 is incurred.

Marcon and Dexter (2007), for instance, use discrete-event simulation to examine how standard sequencing rules, such as *longest case first* or *shortest case first*, may assist in reducing the peak number of patients in both the holding area and the post anaesthesia care unit (PACU). A similar analysis of such sequencing rules is provided in (Marcon and Dexter, 2007). In this paper, however, the authors restrict the focus to the PACU and study, amongst other, its makespan and the peak number of patients. The makespan represents in this case the completion time of the last patient's recovery. In both studies, operating rooms are sequenced independently which resulted in a reduced complexity. It should be clear, though, that this can be done simultaneously as well (e.g. [Cardoen, et. al. 2007 and Hsu, et. al., 2003]).

Financial criteria make up an alternative performance perspective. Dexter et al. (2002; 2003; 2005; 2002; and 2001) examine how adequate planning and scheduling contributes to an increased contribution margin, which they define as revenue minus variable costs. It should be noted that research efforts are not limited to the identification of the best practice. Dexter et al. (2002), for instance, formulate a linear programming model in which the variable costs are maximized in order to determine the worst case scenario. One other evaluation approach is to

determine how well operating room planning or scheduling procedures fulfil the preferences of its stakeholders. Cardoen et al. (2006 and 2007), for instance, solve a case sequencing problem in which they try, amongst other, to schedule surgeries of children and prioritized patients as early as possible on the surgery day. At the same time, they want patients with a substantial travel distance to the ambulatory surgery centre to be scheduled after a certain hour.

Although most manuscripts take only one decision level into account, this does not necessarily have to be the case. Testi et al. (2007), for instance, report on a hierarchical three-phase approach to determine operating theatre schedules. In the first phase, which they refer to as session planning, they determine the number of sessions to be scheduled weekly for each discipline. Since they distribute the available operating room time over the set of disciplines, this problem can be regarded as a case mix planning problem. Phase 2 formulates a master surgery scheduling problem in which they assign an operating room and a day in the planning cycle to the sessions of each discipline. Both phases are solved by integer programming and are situated on the discipline level. Phase 3, on the contrary, is formulated in terms of individual patients. A discrete-event simulation model is presented to evaluate decisions concerning date, room and time assignments. When patients are scheduled consecutively in an operating room, i.e. without incorporation of idle time, the planned surgery start times (time decision) are determined by sequencing the patients.

Dedicated heuristic procedures broadly fall into two main categories, namely constructive and improvement heuristics. Whereas constructive heuristics generally build solutions to planning and scheduling problems from scratch, improvement heuristics perform operations on an existing schedule to transform a solution in an improved one. Guinet and Chaabane (2003), for instance, present a primal-dual constructive heuristic that assigns patients to surgery days and operating rooms. Their algorithm, which is an extension of the Hungarian method, minimizes both operating room overtime costs and patient hospitalization costs, i.e. costs resulting from the waiting time between the hospitalization date and the intervention date. Hans et al. (2008) propose various priority-based constructive heuristics to maximize the capacity utilization of the operating theatre and minimize the risk of overtime by introducing an amount of planned slack time. However, they also elaborate on improvement heuristics such as a random exchange method, which only accepts changes, or swaps that yield an improved solution, or a simulated annealing approach, which accepts worse solutions with a low probability in order to leave local optima. Also reports on solution techniques that are rather rarely applied to the domain of operating room planning and scheduling. Lovejoy and Li (2002), for instance, analytically examine whether it is preferred to increase capacity by extending the working hours in the current operating rooms or by building new operating rooms. They evaluate both scenarios with respect to the waiting time to get on the schedule, the start-time reliability of procedures and hospital profits. The Gantt Chart scheduling techniques was used in this study.

## **2.2: Scheduling and Timetable Construction**

Scheduling and timetabling are typically viewed as two separate activities, with the term scheduling used as a generic term to cover specific types of problems in this area. Consequently, timetable construction can be considered as a special case of generic scheduling activity. In most general terms, scheduling can be described as the constrained allocation, of resources to objects, being placed in space-time in such a way as to minimise the total cost of a set of the resources used (Wren, 1996). Timetable construction is the allocation, subject to constraints, of given resources to objects being placed in space-time in such a way as to satisfy or nearly satisfy a desirable set of possible objectives (Wren, 1996). Class timetables and examination timetables are examples of these problems where all hard constraints must be

satisfied to generate a valid solution. Thus, in practical terms the timetabling problem can be described as scheduling a sequence of lectures between teachers and students in a prefixed time period (typically a week), satisfying a set of varying constraints (Schaerf, 1999).

Many approaches and models have been proposed for dealing with the variety of timetable problems (Bardadym, 1996). Problems range from the construction of semester or annual timetables in schools, colleges and universities to exam timetabling at the end of these periods. Early timetable activities were carried out manually and a typical timetable once constructed remained static with only a few changes necessary, in order to fine tune it every semester or year. However, the nature of education has changed substantially over the years and thus the requirements of timetables have become much more complicated than they used to be. Consequently, the need for automated timetable generation is increasing and thus the development of a timetable generation system that generates valid solutions is essential.

The early techniques used in solving timetabling problems were based on a simulation of the human approach in resolving the problem. These included techniques based on successive augmentation that were called direct heuristics. These techniques were based on the idea of creating a partial timetable by scheduling the most constrained lecture first and then extending this partial solution lecture by lecture until all lectures were scheduled (Schaerf, 1999). The next step was for researchers to apply general techniques like integer and linear programming, graph colouring (Gantt Chart) and network flow to solve the timetable problem. Hence the first two papers published on timetable construction using these general techniques are generally attributed to Kuhn (1955) and Haynes (1959). Kuhn's paper adopts a mathematical approach to the fundamental timetable problem in contrast to Haynes's paper, which concentrates, on the more practical problem aspects of scheduling events for a conference. Interest in timetable solution generators increased dramatically in the 1960s mainly due to the more common availability of computers to perform the "number crunching" required by the algorithms developed. It was in these papers that the first use of look-ahead techniques was discussed. For instance, Appleby, et. al. (1960) and Lewis (1961) used a primitive look-ahead technique involving heuristic counting arguments.

De Werra (1985) listed the various problems dealing with timetabling in a formal way and provided different formulations in an attempt to solve them. He also described the approaches considered the most important at that time, stressing the graph-theoretic ones. Carter (1986) analysed a survey, which discussed actual applications of timetables at several universities. He also provided details of a tutorial guide for practitioners on electing and/or designing an algorithm for their own institutions. From the literature, there emerged a trend that in the last decades the topics of timetabling were mainly confined to the Operational Research Community. The techniques used were mathematical in nature, the two most common being linear programming (LP) and integer programming (IP). In the current decade the contribution of artificial intelligence has provided the timetabling community with promising modern heuristics, like Generic Algorithms, Simulated Annealing Tabu Search (Schaerf, 1999).

Almost all of the papers in the literature describe substantial software implementation. In addition, this is supported by the presentation of results of the application of the method in one or more test cases. The results obtained are measured against manual results but unfortunately, the absence of a common definition of the various problems and of widely accepted benchmarks prevents the comparison of the algorithms among each other. The computational complexities of the proposed systems are determined only through computing time. However comparisons are difficult as hardware varies from case to case. Furthermore there seems to be a substantial gap between the theoretical discussion and implementation of the software to test cases in contrast to obtaining effective and realistic timetables that can be

used in everyday operations. This gap can be attributed to the various problems that are not foreseen but encountered in the workplace. Some of the major problems that do occur are listed:

- (1) Students tend to change their enrolment quite frequently, even up to the last week of the semester, which leads to clashes that can require the regeneration of the timetable in the hope of finding a feasible solution.
- (2) Most of the techniques utilised in timetable generation assume that lectures and tutorials are of equal length in order to facilitate the algorithm to successfully work. However in reality there are a number of subjects that do not conform to this time frame and as such normally need to be allocated to a time slot manually. This action reduces the efficiency of the automated timetable application and can lead to clashes in other parts of the generated solution.
- (3) The majority of algorithms that have been developed do not allow a temporal ordering of teaching slots within the same subjects. This is normally expected by subject convenors (person responsible for managing a subject) and can lead to dissatisfaction with an automated timetable system.

Therefore in order to generate a timetable that is practical and effectual it needs to be flexible enough so that it can facilitate and overcome the problems listed above as they occur.

### **3. Methodology**

A Low-volume system (job-shop scheduling) gives rise to two basic issues for schedulers: how to distribute the workload among work centres which is known as loading; and what job processing sequence to use which is known as sequencing. Loading decisions involve assigning specific jobs to work centres and to various machines in the work centres. When making assignments, managers often seek an arrangement that will minimize processing and setup costs, minimize idle time among work centres, or minimize job completion time, depending on the situation.

Visual aids called Gantt charts which were derived from the name Henry Gantt who pioneered the use of charts for industrial scheduling in the early 1900 was used in this study. It is often used as visual aid for loading and scheduling purposes. Two different approaches are used to load work centres: Infinite loading and finite loading. Infinite loading assigns jobs to work centres without regard to the capacity of the work centre. Finite loading projects actual job starting and stopping times at each work centre, taking into account the capacities of each work and the processing times on jobs, so that capacity is not exceeded. Finite loading was used in this study.

Also, there are two general approaches to scheduling: forward scheduling and backward scheduling. Forward scheduling means scheduling ahead from a point in time while backward scheduling means scheduling backward from a due date. Forward scheduling is used if the issue is "How long will it take to complete this job?". Backward scheduling is used if the issue is "When is the latest the job can be started and still be completed by the due date?" Forward scheduling was used in this study because it enables the schedulers to determine the earliest possible completion time for each job and; thus, the amount of lateness or the amount of slack. The information can be combined with information from other jobs in setting up a schedule for all current jobs.

#### 4. Data Presentation, Analysis and Discussion

##### 4.1: Data Presentation and Analysis

The purpose of Gantt charts is to organize and visually display the actual or intended use of resources in a time framework. A time scale is represented horizontally, and resources to be scheduled are listed vertically. The use and idle times of resources are also reflected in the charts below. The figures below shows scheduling of operating rooms for a period of one week and scheduling of classrooms for a university for a period of one week (Monday-Friday) in Gantt chart system respectively.

Timetabling Charting for the Departments of Business Administration and Entrepreneurial Studies

**Table 4.1: One week Timetable that requires being depicted in a Gantt Charts**

##### Monday

Course	Venue	Time
ETS 202	VET (AUD)	10-12 AM
BAM 206	ANENE	2-4PM
BAM 204	MP02	4-6PM

##### Tuesday

Course	Venue	Time
BAM 202	CFAB	8-10 AM
ETS 206	A 101	11-12 PM
ETS 204	CFAB	2-4 PM
ETS 102	A 101	8-10 AM
BAM 212	VET (AUD)	4-6 PM

##### Wednesday

Course	Venue	Time
ETS 206	JAO 1	10-11
BAM 208	A 101	11-1 PM

##### Thursday

Course	Venue	Time
ETS 208	CFAB 1	2-4 PM
ETS 210	CFAB 1	11-12 PM
ETS 212	CFAB 2	2-4 PM
BAM 102	BAM 102	8-10 AM

##### Friday

Course	Venue	Time
BAM 210	CFAB	10-12 PM
BAM 212	JAO 1	12-1 PM

Source: Extracted from Federal University of Agriculture, Abeokuta (FUNAAB) General Time-Table for 2<sup>nd</sup> Semester 2012/2013



The venue and the time allocated to each course are shown in the tables above. The courses are writing in codes allocated to each course title and the venues are also writing in abbreviation form as normally being called by students and staff of FUNAAB.

**Table 4.2: One week Surgery Scheduling for operations in a Hospital**

**Wednesday**

Operating Rooms	Time and Name of Doctors	
	<b>First operation</b>	<b>Second Operation</b>
A	7-8 AM (Dr. Peter)	10-12 PM (Dr. Morris)
B	7-9 AM (Dr. John)	11-1 AM (Dr. Allison)
C	8-9 AM (Dr. Alice)	11-12 PM ( Dr. Smith)

**Friday**

Operating Rooms	Time and Name of Doctors	
	<b>First operation</b>	<b>Second Operation</b>
A	7-9 AM (Dr. John)	10-12 PM (Dr. Allison)
B	8-10 AM (Dr. Peter)	11-1 AM (Dr. Morris)
C	7-9 AM (Dr. Alice)	10-12 PM ( Dr. Smith)

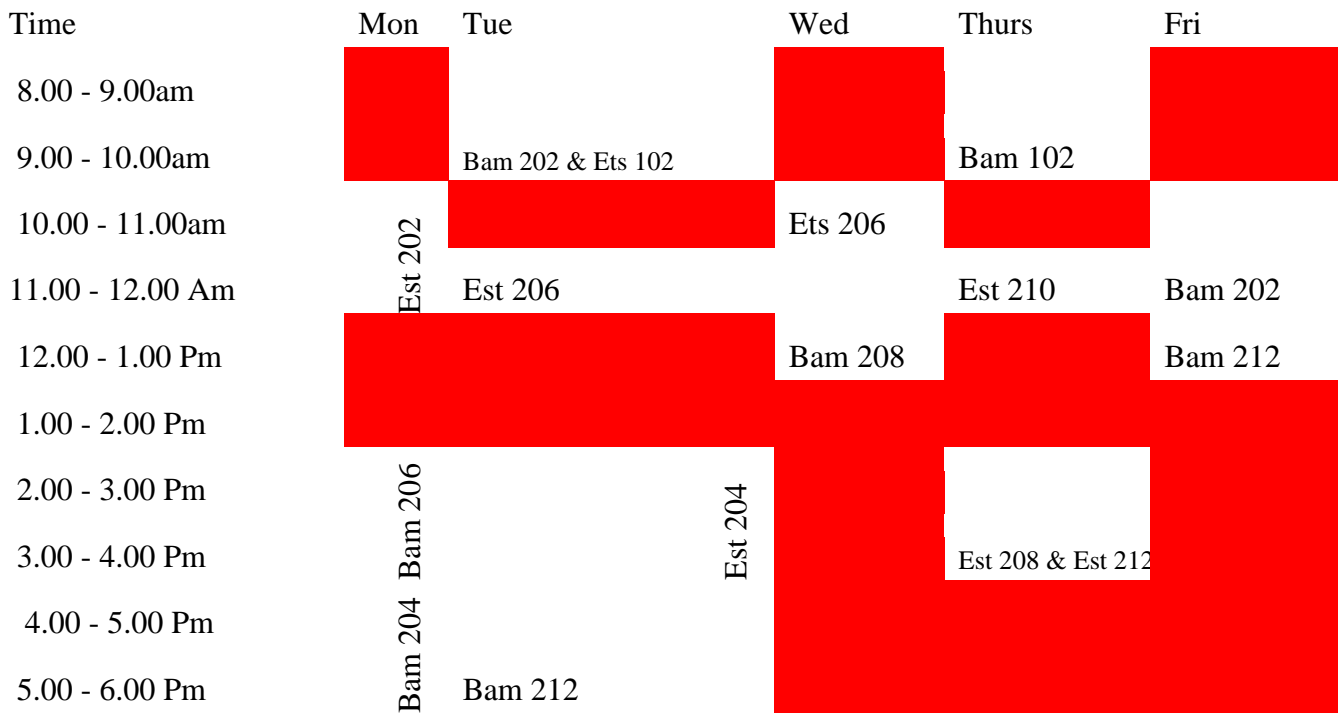
Source: Field Survey, 2013

The table above shows the surgery operations schedule per Doctor in terms of the time, patients and operation rooms allocated to them respectively. However the modes of operation in the hospital as at the periods of this study were as follows:

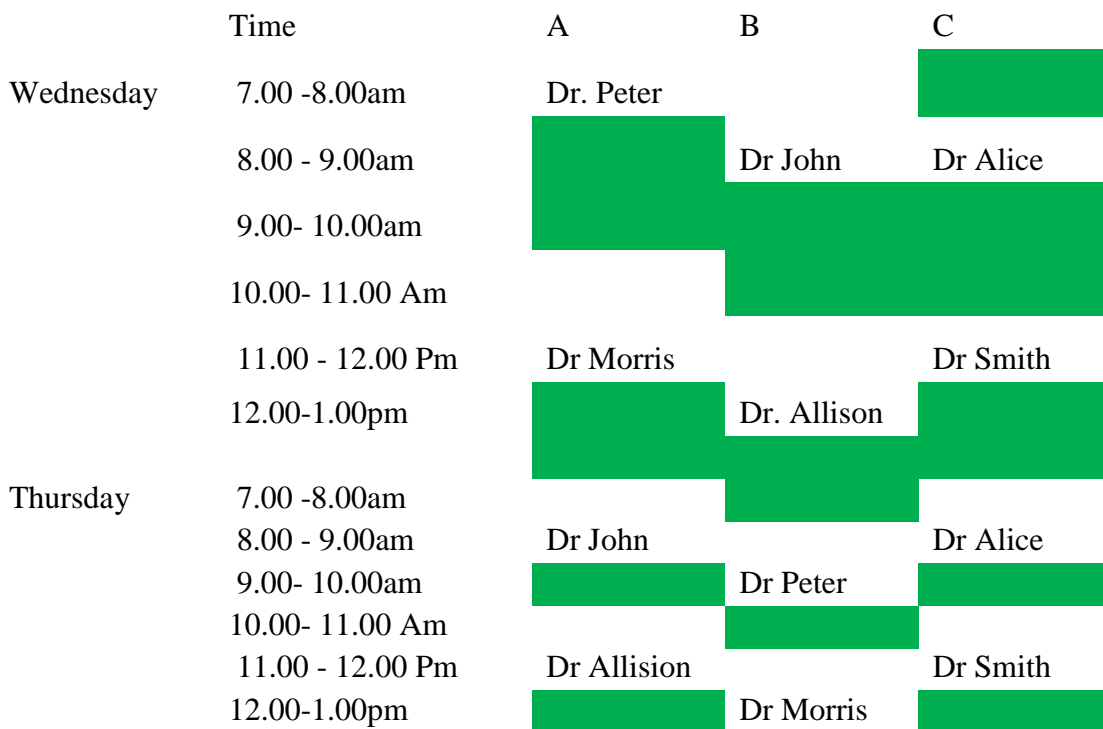
1. Except on emergency surgery operations are done two (2) times in a week: Wednesday and Friday.
2. There are three (3) operating rooms (A, B and C)
3. There are six (6) specialist Doctors (Morris, John, Alice, Smith, Allison and Peter)

Dept of Business Administration and Entrepreneurial Studies

Figure 1: Gantt's Chart Showing Table



**Figure 2: GATT’s Chart Showing the Surgery Operations**



#### 4.2 Discussion of Findings

Managers often use the charts for trial-and- error schedule development to get an idea of what different arrangements would involve. Thus, a tentative university time-table schedule and surgery schedule might reveal insufficient venue for lectures or examination in a university or college. In the same vein, it might reveal insufficient allowance for surgery that takes longer than expected and can be revised accordingly. Also use of chart for classroom scheduling would help avoid assigning two different classes to the same room at the same time.

In the time-table scheduling chart shown above, the shaded portions represent idle venues. Although, those shaded portions may be idle for the students and staff of the Department of Business and Entrepreneurial studies, other students and staff within and outside the college of management sciences where those departments are domicile would make use of those idle time and venues. The schedule chart has given the grasp of the overall status of the venues and time available. Thus the university timetable committee can make informed decisions just by looking at the Gantt chart.

In surgery schedule as shown in the chart above, the idle time and venue as indicated in the shaded portion can be used to accommodate further future operations. The chart has shown at a glance that there are eleven (11) idle time needed to be occupied by the six (6) Doctors. Although part of those time can be used for relaxation and break times for Doctors. The Gantt charts can also be used to monitor the progress of the jobs and also to track the progress of the entire operation. For example, in the surgery chart, between 7-8 am on Wednesday, we would have known at a glance that Dr. Peter would be busy also Dr. John between 8-9 am on the same day, in operation rooms A and B respectively and so on.

Also, in the case of time-table schedule, we would at a glance see that lecturers teaching BAM 202 and ETS 102 must be busy in their respective venues between 9-10 am on Tuesday. And on Monday, Lecturers teaching ETS 202 can be tracked in the venue slated for him/her between 10-12 pm on Monday. Another advantage of these schedule charts is that we would be

able to know at a glance when there is/are clash (es) in venues at the same time. Proper arrangement can be made immediately to correct those problem(s). It is a form of control mechanism, for example, on Thursday between 3-4 pm, ETS 208 and ETS 212 clashed, but proper arrangement was made later on students complaint. If this type of schedule chart has been drawn earlier before the release of the general timetable, it would have been used to prevent problem of clash in time and venue.

## **5. Conclusion**

Scheduling can either help or hinder operating strategy. If scheduling is done well, products or services can be made or delivered in a timely manner. Resources can be used to best advantage and customers will be satisfied. Scheduling not performed well will result in inefficient use of resources and possibly dissatisfied customers. Gantt chart is a type of a bar chart that is used for illustrating project schedules. Gantt charts can be used in any projects that involve effort, resources, milestones, and deliveries. Identifying the level of detail required in the schedule is the key when selecting a suitable Gantt chart tool for the project. One should not overly complicate the project schedules by using Gantt charts to manage the simplest tasks.

Although, Gantt charts accurately represent the cost, time, and scope aspect of a project, it does not elaborate on the project size or size of the work elements. Therefore, the magnitude of constraints and issues can be easily misunderstood. This problem of complexity can be successfully overcome by using computer software packages designed for offering Gantt chart functionalities.

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# Duong Thu Huong's *Novel without a Name*: A Silent Cry from Vietnam

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## **Abstract**

Duong Thu Huong is a Vietnamese writer who lives in exile in Paris. Her works often depict the cruelty of the Communist regime in her country. Duong who was born in Thai Binh, North Vietnam is a former member of Vietnamese Communist Party where in 1967, she joined the Women's Youth Brigade in the front lines in the war against the Americans. She spent seven years in the jungle and in the tunnels of Binh Tri Thien which was the most bombarded part of Vietnam. She was one of the three survivors out of the 40 volunteers in that group. She was also involved with the Sino-Vietnamese War in 1979. After the reunification of North and South Vietnam in 1975, she began to speak against the communist government. Thus, her works were banned. This paper intends to show the other side of human and the humanity possessed by the communists who are seldom branded as cruel and heartless by the western media. Duong Thu Huong's *Novel without a Name* is another attempt to open the same window to the same view but by a pair of different hands. She makes another effort to illustrate what has been lost in Vietnam during the years of war. To transfer the message of war to her readers, she creates a variety of characters and events during the course of the story. The whole novel can be considered as a sickening shock to open the eyes of the world to the consequences of war to the people of Vietnam. This paper will show that they too are ordinary people who are caught in an unwanted situation. They are merely the victims of circumstances who are trapped by ambitious individuals who lead them astray for their own benefits and their ideology.



## Introduction

The race for power among the European super powers caused them to colonize and interfere in the sociopolitical ideologies of many Southeast Asian countries. Their Western ideologies ignited many civil wars in these countries. Vietnam is one of the countries which experienced eighteen years of civil war between the north, under the leadership of Ho Chi Minh and the south which was backed by the French and US. The clash of ideologies triggered a war that lasted from 1957 to 1975. Vietnam War was often pictured as a war of democracy against communism; the angels against the Satan. The western media has pictured the communists (Vietminhs) as monsters and cruel. Hollywood movies like *Missing in Action* (1-3) starred by martial artist, Chuck Norris often gave a very negative impression on the Vietnamese people. They were depicted as very cruel and inhumane. There are some movies that depicted the cruel actions of the American army in Vietnam. But these cruelties were often justified as a pay back or revenge for having killed their crew members. Duong, however shows that the perceptions of the West on the humanity of the Vietnamese were wrong. This paper will show how contrary to the popular and western orchestrated picture, the so called cruel and inhumane communist soldiers too are mere humans with conscience and feelings. In short they too are blended with flesh, blood and soul that are capable to feel pain, joy and crave for love. More often than not these soldiers were merely victims of circumstances and ideologies and were forced to live up for another individual's life. The Vietnam War lasted for eighteen years. It is a notorious war which is known all around the world due to its enormous destruction and unbelievable consequences thanks to American and South Vietnamese movies and pieces of biased literature, but this time Duong, a former Communist soldier from the North Vietnam takes the readers by hand to the battle fields and gives them "a non-adulated and non-tampered first-hand accounts" of this war in a way they really deserve to see it.

Duong Thu Huong was born in Thai Binh, a province in northern Vietnam, in 1947. She is a former member of Vietnamese Communist Party. In 1967, she joined the Women's Youth Brigade at the age of twenty in the front lines in the war against the Americans. She volunteered at the age of twenty, while she was studying at Vietnamese Ministry of Culture's Art College. She spent seven years in the jungle and in the tunnels of Binh Tri Thien which was the most bombarded part of Vietnam at the time of war. She was one of the three survivors out of the 40 volunteers in that group. Duong spent all those years in the jungles and tunnels to help the wounded, bury the dead, accompany the soldiers along, and give theatrical performances for the North Vietnamese soldiers. Her direct involvement with the war and the war makers makes her the perfect judge to report the Vietnam War. She was also involved with the Sino-Vietnamese War in 1979. Her non-partial portrayal of the war did not go too well with the leaders of her country. This novel was seen as a threat to the communist government in Vietnam. Duong who now lives in exile in Paris gives the world a different picture of the hard core communist soldiers in Vietnam. After the reunification in 1975, Duong began speaking out against the communist government.

After writing *Novel without a Name*, she was imprisoned for 7 months without trial. Her passport was revoked. Her works faced the most cruelty of censorship compared to her counterparts. Though she wrote for Vietnamese readers, none of her work is in any Vietnamese anthologies or collections. From the year 1985 to 1987, she was the employee of Hanoi Fiction Film Studio where she independently produced a documentary film titled "A Sanctuary for the Despairing". It was about the inhuman conditions in camps in Tan Ky, Ha Tinh province where 600-700 'mentally ill' war veterans lived. Duong has also described the horrible conditions of this camp in the *Novel without a Name*. However, the film was destroyed by the order from Nguyen Van Linh, Security Police in 1990. In 1988, her novel titled *Paradise of the Blind*

outraged the Vietnamese leaders. It related the horror of 1953-1956 land reform campaign. The novel, which sold 60 000 copies was later banned. In 1990, *Novel without a Name* was also banned.

But the banning of this work came as no surprise especially for those who understand the psychological game of any communist regime. Obsessed with the ideology, the leaders will go to great length to convince the world that theirs is a nation of paradise with every single subject, with unparalleled vigor and bravery willing to lay down his life to protect the “the best political system” that exist in the world. But Duong instead reveals vulnerable aspects of communism and the people. She shows what has been lost in Vietnam during the years of war. She herself has felt the pain, sorrow, and loss of innocence by every cell of her body, since she has spent seven years in the jungles and tunnels struggling with the disaster of war. Unintentionally, the involuntary memories give her the necessary potential and ability to pass all those conflicting feelings to people who either had not been engaged in war or had been engaged, but misled by communism. Besides the majority who were echoing the Marxism-Leninism ideology in Vietnam, she shows that there were many who resented war. They found that the war was useless and the course is senseless. Championing the ideology only brought more pain than joy. The never ending war rode people crazy. They were yearning for love, longing to return home and find peace. She shows how the soldiers were trapped in the ideology which was never theirs. She shows that like her, they were all actually victims of other people’s ideology and fighting someone else’s war.

### **The Silent Cry from Vietnam**

This novel depicts the life of a soldier named, Quan who reminisces the past and present experiences in the communist regime. She uses Quan to open the eyes of the world to the consequences of war and to show that the communists were not monsters and they had the same feelings like all the other people in the world. Duong brings a soft touch to communism by using certain characters in her novel who portray the other side of communism; humanity and morale. Luy, a soldier in Quan’s unit shot a forty-five pounds orang-utan. Quan was persuaded by Luy to taste the orang-utan soup due to lack of food. Quan hesitates to eat the soup because it reminded him of eating human flesh as the orang-utan’s hand reminded him of a child’s hand. After much persuasion and teasing from the soldiers, he eats but throws up.

*“My cheeks burned. I took the hand from the ladle and bit into it. I spat out a mouthful of tiny joints and bones (Duong, 1996: 10)”*.

The fact that he could not continue eating the soup shows that Quan is still humane. Duong shows that the hardship to obtain proper food drove these soldiers to eat whatever they could find in the jungle but they have not lost their humanity. Duong also reveals the human qualities in the soldiers through another incident where he saves Luy from court-martial when Luy accidentally shoots his friend, Phien thinking that he was an orang-utan. Quan voices his frustrations on the war when he sees the guilty Luy closing his eyes tight begging Quan to put a bullet through his head. He looks at the Phien who is dead and thinks:

*What a bitch, this life: The survivor had closed his eyes, waiting for a bullet, while the dead man stared wide-eyed into space (Duong, 1996: 22).*

He refuses to kill Luy for his mistake instead he tells him to forget that incident since it was an accident. The guilty Luy asks Quan to shoot him but Quan refuses. He feels that it is important to preserve Luy’s life for his old mother’s sake “who was a widow who lived and breathed for him” and someone who “would hang herself or jump into the river” if he was convicted. Moreover, “Luy was her only pride, her sole reason for living” (Duong, 1996:23). Thus, Duong highlights the humanity and the consideration possessed by the Communist

soldiers. Although the accidental shooting was hidden from the superiors, Luy becomes insane in the end. He could not hide away his guilt and lead a normal life. Though these soldiers have seen death among their fellow soldiers for the past ten years on the field, Duong proves that they have not lost their humanity through the character of Luy. It is clear that Luy could not overcome the guilt as an accident because he had too much of humanity in him.

Quan is then ordered to go on a mission to meet his childhood friend, Bien who has been admitted to an infirmary in Zone K and goes through another phase of experience where Duong projects the longingness for love possessed by Communist soldiers. Besides the portrayal of humanity, Duong also highlights the love and the longing to be loved felt by the soldiers. She highlights the unspeakable feelings of love that they had to bury within them because of the long war. Duong uses the different characters to show the opposite of what a clichéd perspective of a communist usually is. He takes shelter in N22 where he meets a female soldier named Vieng who was a giant. She was in charge of the N22 cemetery and her job was to gather the corpses and burn them. Duong shows the loneliness and longingness of a woman through this character. Though, she was a burly woman, she begged Quan to make love with her. When Quan rejects saying that if she got pregnant, it would kill her, her reply shows that loneliness was killing her slowly.

*There's no risk. If I got pregnant from you, all the better. (Duong, 1996:46).*

Duong shows that the war and the Communist ideology has not killed the human factor in every individual involved in the war. After that incident in N22, Quan continues his journey to meet Bien until he gets trapped in a valley covered with red colocassias. After walking around for days with no way out, he stumbles upon a skeleton of a lost soldier in a nylon hammock. He finds the young soldier's diary in his knapsack where he finds a note asking the finder to send the sack to his mother in Em Mo village in the Phung Commune. The discovery of the diary saddens Quan further as the word 'mother' in the dead man's diary brought back the memory of Quan's own mother. The last entry in the diary of the dead soldier is very saddening. He knew that he was going to die as he was trapped in the valley and could not find his way out. The soldier eventually died out of hunger. As he was nearing his death, he wrote:

*Mother, I'm dying. I'm never coming back. There will be no one to repair the thatch roof (Duong, 1996:57).*

When Quan realised that he too might face the same fate like the young 'brother' in the forest, he says, "I felt it, how much I wanted life. I didn't know what would happen to me, but I wanted to live (Duong, 1996:56)". Quan and the dead soldier symbolize the lives of the soldiers in the war. They all had the urge to live, to fall in love, to experience the freedom of an ordinary youth and experience the coming of age. They all remember the only female image in their lives, their mother, because they were too young to fall in love or get married before leaving for war. They all deserve to live with the women who bore them. But the war has snatched the privilege from their lives. Most of them never got the chance to meet or be reunited with the family members ever again. Some turn into skeletons and the only thing left of them is a piece of writing, a diary, for the loved ones at home. When the soldiers left for war, they were full of hope to attain victory for their country and to one day be reunited with their family members and live an ordinary life again. But the reality of war is just the opposite. In the end, the soldiers fought for a meaningless battle just to end up sacrificing everything, and finally their lives. Duong tries to show the uselessness of the Vietnam War to the world. The Communist soldiers too were human and they had all the desires like any other person. A typical opinion on a communist usually is that they are heartless, that they don't care for neither their family nor others. But here, the author tries to imply that no matter what, the world's opinion is on the communist, they are people with ordinary feelings, just like the rest of the

world no matter what ideology they have been doctrine with. Quan's frustration on war and his resentment towards weapon is also highlighted when he mumbles to himself about the weight of the machine gun, saying "who was the bastard who invented this thing?" (Duong, 1996: 57). Quan decides to take the diary of the dead soldier to his mother. He learns that the soldier's mother, Madame Dai Thi Ly had lost her husband while she was pregnant and the son was all she had. Quan also learns that the "soldier was a gentle boy, especially gifted at playing monochord, the recorder, and the flute (Duong, 1996:202)". Duong shows that the soldier was an ordinary youth who loved his life and his mother very much. Madame Dai represents the many mothers who lost their children to war during that period.

Finally, the author tries to show that the lengthy Vietnam War is never a war liked by the Communist soldiers. They were merely victims of some ideology shaped and championed by others. The novel is set in the 1975 where the war between the North and South was entering the final phase. The French and the American troops have withdrawn from Vietnam and the South was left to defend themselves from the avenging Northern army which was led by Ho Chi Minh. The writer uses her tact to uncover the Vietnamese Communism and its ecstasy on the day of enlistment to show all those young soldiers had been told that it was not simply a war against foreigners, but a chance to experience resurrection and a chance to see their country respected and honored all around the world after the war.

*This war was not simply another war against foreign aggression; it was also our chance for a resurrection. Vietnam had been chosen by History: After the war, our country would become humanity's paradise. Our people would hold a rank apart. At last we would be respected, honored, revered. We believed this, so we turned away from those tears of weakness (Duong, 1996: 31).*

Duong uses Quan's momentary dreams of the enlistment day to clarify how the Vietnamese Communism took advantage of Marxism and Leninism ideology to put gun in the hands of the youth and bring power to its own identity. However, the strength of the ideology does not last long in the soldiers. Quan and his friends were recruited ten years ago at the age of eighteen. They had renounced everything for glory. Quan's resentment towards the never ending war could be seen when he laments upon his lost youth.

*I thought of my youth, how it had ticked by in long, merciless years of pain. Why this fate, why had it been reserved for me (Duong, 1996:72)?*

After nine days of walking, Quan arrives at the infirmary. He learns from Commander Dao Tien that Bien had become mad and started mating with animals. However, he finds Bien in a very devastating condition. He seems to be feigning his madness. Quan asked Bien to return to their village and settle down but Bien refuses because he would be made fun of deserting the army. Then, Bien is taken to Zone F where they made coffins. Through this character, Duong highlights the filthy condition of the infirmary and how the never ending war had turned many soldiers mad. The character of Bien symbolizes one of the negative effects of war: insanity. One can get out of it, or one can't. In most cases, insanity or madness is the final resort before death. If left uncontrolled, one could harm him/herself resulting in death. This was what happened to Bien. He suffered as he could not face the reality of war, often physically hurting himself in the asylum; "He always aims for the nails (Duong, 1996:89)". The fact that Bien went into the stables proves that the restrain from having physical contact with women made him animalistic to the extent of using animals to release his sexual deprivation. Besides that, Duong also shows how the lives of intelligent people were wasted due to this meaningless war. Quan's younger brother, Quang, was also enlisted to join the army although "he was brilliant, had won second prize in the provincial mathematics competition and he actually wanted to study computer science (Duong, 1996:123)". He was forced to join the army by his

father who believes strongly in the ideology. His death was just announced an envelope which “was so light it felt empty (Duong, 1996:122)”. The death of a soldier is taken so lightly, just like the lightness of the envelope containing the news of death. The war has made death as a common phenomenon that it is not taken seriously. The sacrificial of an ordinary man who would have a better life and future is totally neglected and were treated as another meagre episode of the day. Another character that shows the negative impact of war is Quan’s father. His father was never the man he used to be after returning from war. He began to torture his wife. Quan’s father came to an extent to suspect his own wife to have an affair and this led him to being engulfed in jealousy. Later, when Quan’s mother dies, he marries another woman but the marriage did not last long. The war has drained out his strength and he lives a life without any motivation or drive and he became insane.

*The only way he didn't starve was by imitating his neighbours. This obstinacy, this perseverance reminded me of a water buffalo (Duong, 1996:117).*

Duong proves that men like Quan’s father represent those who blindly follow the ideology without much questions nor contemplations. Besides that, Quan also realises that his girlfriend had been recruited as a mission comrade or comfort women to fulfil the desire of the Communist leaders. He finds her heavily pregnant upon returning to his village. He also learns from Mr. And Madame Buu, Bien’s parents, how brutally the Communists behaved and bullied the people in the name of ideology.

*Now the ones who hold the reins are all ignoramuses who never even learned the most basic morals. They study their Marxism-Leninism, and then come and pillage our vegetable gardens and rice fields with Marx's blessing. In the name of class struggle, they seduce other men's women (Duong, 1996:133).*

Through these characters, Duong exposes to the world the shortcomings of the Communist ideology which was championing fair treatment to everyone. During his journey, Quan finds himself overhearing two officials on a train. The author tries to achieve two aims by creating this episode. First to shed light on what is in reality behind the Vietnamese Communism, explaining it through the speech of two of its own authorities. This makes the readers to get to know what the party gained by fooling ordinary people and on the other hand shows the disillusionment of a soldier who gets to know what he had fought for. They bragged on how they abandoned everything for an ideal that came with their seventeen- year-old consciences but turned out to be nothing when they aged. They claim that “words are like everything else in life: They’re born, they live, they age, they die” (Duong, 1996:161). The brutality of civil war lies in what these two people say and their behavior.

*Revolution, like love, blooms and then withers. But revolution rots much faster than love, 'comrade.' The less it's true, the more we need to believe in it. That's the art of governing. Spreading the word, now that's your intellectuals' job. We pay you for it (Duong, 1996:161).*

They bring about the term “comrade” who carries the impression of equality and brotherhood inside. It in fact means friend and colleague. The two officials discuss that it means many things and in the end nothing, but the leader’s trick to fool people. It can be perceived that this word was used on purpose to put people under a fake flag of equality, sending them to the front to buy power for the party by selling their blood. In addition to this issue, they openly confess that they have manipulated the public opinion, bombarding them with Marxism-Leninism ideologies. The main purpose of creating such a scene is to open the eyes of those who have been sucked by these opinions and give them the opportunity to see the whole event from an official’s point of view, to know that the Vietnamese Communism has had one single objective ; creating one ideal and achieve one identity to avoid the share of power.

This way the party did not need to share its power with the individuals of the society. It also did not need to satisfy sundry of ideologies and beliefs to participate in war. (Duong, 1996: 157-167). At one point, they also condemn Karl Marx's personal life. Duong shows the brutality of Marx's ideology on the Vietnamese people where they were left to suffer. When they were scolded by a military officer for insulting Karl Marx and the socialist government, they shout back at the military man saying that they are the high-ranking dignitaries who are in charge of introducing Marxist thought to Vietnam. After chasing the officer, one of them condemn the blind followers:

*"Well? Did you see that? A nation of imbeciles. They need a religion to guide them and a whip to educate them" (Duong, 1996:167).*

Duong also highlights how following an ideology blindly can lead to disaster. Quan gets to know his real identity, a puppet that receives some orders from the higher ranks and then dictates the same orders to the lowers. She also exposes that the Vietnamese people are trapped in this ideology through Quan's illusion of seeing his brother. After hearing the news of Quang's death, Quan starts seeing an illusion of his dead brother, in the shape of a small fish caught in a net. The illusion comes to him out of nowhere and every time. He sees it in the middle of every other occasion like eating and talking. The uninvited illusion is a warning. It leads Quan to remember and think of someone's struggle for life and of someone's being trapped in a useless current. It artistically leads Quan to see him caught in the same net, struggling the same way. Duong tries to show that human beings are sometimes trapped. They do not tend to. No fish commits suicide, throwing itself into a net (Duong, 1996:239). All around the world, individuals are trapped unintentionally in nets and they are not even aware of the existence of such traps just like the ideology. She also exposes how soldiers were ordered to go for war in dangerous zones in order to please the Party's secretary and partly out of negligence. Fifty members of B-41 platoon were massacred for nothing "because of some idiot's ambition (Duong, 1996: 231-232). Through Quan, Duong ridicules on how the Northern Vietnamese soldiers are to force to follow an ideology and abandon their religion. When Quan interrogates an enemy soldier from the South, he learns that he was a Buddhist. Quan says the following about the Communists:

*We worship a theory. But you enemy soldiers are all the same. Our god's name is Marx. He's got a pug nose, blue eyes, and a shaggy beard. So, who's your god? Is he bald or hairy? Does he have a high forehead or a low one? Does he wear a goatee or a mustache?(Duong, 1996:244).*

Through her well choreographed characters, Duong is able to expose all the shortcomings of the Vietnam War and the disaster brought by it to the soldiers and the masses.

## **Conclusion**

After reading *Novel without a Name*, one may view the Vietnam War as futile. The reason is that the author does her best to create a brutalizing painting, drawing the disillusionment of the soldiers who have dubious ideological motives after ten years of war, using red color in each single strike. Wherever it happens and whatever the reason is, war has irrecoverable effects. In some cases the psychic and physical effects can be perceived during some other coming decades. In Vietnam there was an attack called Operation Rolling Thunder. It backed up by phosphorous and napalm bombs, causing dreadful burns to thousands of innocent civilians. Americans also used a chemical called Agent Orange containing dioxin, which killed off millions of acres of jungles. The dioxin then entered into the food chain causing chromosome damage to human. There were hundreds of cases of children born with deformation ( Elliot, 73.) In the memories, movies, and novels of the participants who survived

the chaos of war the effects of war are disillusionment, desertion, loss of moral compass, personal conflict, soldiers cracking under stress, sexual assault, break down of discipline, physical damage, drug use, and racism. But, officials have their own version of war which is not easy to understand by those who believe inhumanity. They consider it as a sanitized record of noble endeavor sanctioned by the government that sends its sons and daughters to it (Searle 1999). Among all the mentioned effects some have been clearly brought into *Novel without a Name* by its author. Some episodes have been created to express loss of moral compass, while others are there to show physical damage and loss of life in the end. The war ended on 30<sup>th</sup> April 1975 with the North Vietnam taking over the South, unifying the whole country with Communism. Quan thinks of the brutality and the cruelty that war made him to see with his own eyes. He just thinks that the end of this war is not the time of glory as it had been promised to them. The country is never going to be the same. They will never forget anything. There is no way back to where they once used to be (Duong, 1996: 285).

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# Variations in demographic correlates of contraceptive usage among married women in Nigeria (1999-2008)

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## **Abstract**

This study examined the variations in demographic correlates and patterns of contraceptive usage among married women in Nigeria. The data used were the Nigeria Demographic and Health Surveys (NDHS) data set series for 1999, 2003 and 2008. Overall, 34,919 women in age group 15-49 years were covered in the ratio of 17:15:69 across the three data set respectively. The data sets were merged into a single file and analyzed using a combination of univariate and multivariate analytical techniques. The findings reflect, among others, a progressive increase in contraceptives usage from 1999 to 2008. The study confirmed among others that educational attainment, usual place of residence and age are universal determinants of contraceptive use while desired number of children could be intermediated with other factors to influence contraceptive use among women of child bearing age in Nigeria. The study recommends further campaign towards increasing usage of contraceptives in order to stem the growth rate of children ever born.

**Keywords:** Contraceptive usage, married women, patterns, risk factors

## Introduction

Contraceptive usage is a potent and an indispensable factor in achieving fertility decline among nations with high fertility (Bongaarts, 1978; Donaldson & Tsui, 1990; Population Reference Bureau (PRB), 2011). This has made the knowledge and usage of contraceptives among women a priority in both developing countries and the international agenda (PRB, 2011). However, despite huge investment on contraceptives and family planning campaigns, high fertility level still persists in Sub-Saharan Africa (NPC, 2000 and 2009; Oyedokun, 2007; PRB, 2008; Bongaarts, 2008). The current Nigeria population is estimated to be 162 million and occupies the 7<sup>th</sup> position among the most populous nations in the world (PRB), 2011). The births estimate shows that the developing nations as a whole contributes up to 90 percent of births annually compared with only 10 percent from the developed countries (PRB, 2011). Among the distinct characteristics of the developing nations compared with industrialized nations is high fertility rate. While the developed countries like United State of America, China, Australia and France recorded 2.0, 1.5, 1.9 and 2.0 annual total fertility rates respectively, the developing nations such as Nigeria, Ghana and Kenya have 5.7, 4.1 and 5.3 total fertility rates respectively (PRB, 2011). Today, total fertility rate world-wide ranges from 1.1 children per woman in Latvia and Taiwan to 7.1 in Niger (PRB, 2012).

It was declared that a few developed countries such as Australia, New Zealand, Japan, Europe and North America were collectively home to 1.19 billion people in 1999 by the UNFPA and the annual rates of growth for these countries were almost 0.3 percent. The rates were projected to reduce to zero before 2025 (UNFPA, 1999). While this projection has come to past and most developed countries have achieved zero or negative annual population growth rates, developing nations of Africa are still growing at appalling rates. Specifically, natural increase among the developing nations is 2.4 percent while the developed countries only achieve 0.2 percent (PRB, 2011). Countries such as Hungary, Italy, Latvia, Portugal, Spain, Russia, Bulgaria, Ukraine, Hungary, Germany, Poland, Italy and Greece are currently at zero and negative rates of growth (PRB, 2011). Other projections indicated that the population of less developed nations which was estimated at 5.7 billion would grow at a rate of 1.4 percent annually. Africa already accounted for 15 percent of the world's population with an estimation of about one billion people, which makes it the second most-populous continent (PRB, 2011). This observation is at variance with the situations among the developed nations. The specific population growth rates in Nigeria, The Gambia, Sudan, Ghana, Mozambique, Ethiopia and South Africa are 2.5, 3.0, 2.4, 2.3, 2.8, 2.7 and 0.6 respectively (PRB, 2011).

Although, contraceptive usage among married women has been mounting gradually over the years in most countries, this has not substantially translated into expected decline in fertility rates in sub-Saharan Africa. For example, the percentage of married women using modern contraception in Egypt increased from 36 percent in 1988 to 57 percent in 2003. More dramatic increases have occurred in Haiti, where there was a leap in modern contraceptive usage from 13 percent in 1994 to 35 percent in 2005/06 (Khan et al, 2007; Khan & Khan, 2007). The prevalence rate for all methods of contraceptive in sub-Saharan Africa is still 23 percent (PRB, 2011) and there also exist marked variations within the region in terms of all methods and modern methods. The rates for all methods and modern methods in Kenya were 46 and 39 percent respectively; Ghana recorded 24 and 17 percent while Nigeria rates were 15 and 10 percent respectively (PRB, 2011).

The world's highest rate of natural increase is evident in sub-Saharan Africa and the region has higher potential for multiple growth before 2050 (Jones, 2002; PRB, 2011 & 2012). This large growth would stem from high total fertility rates (TFR) currently at 5.6 children per woman in most of the sub-Saharan countries except a drastic approach is undertaking to stem

this tide. Till date, there is a general consensus that family planning through the use of contraceptive is a potent option to reduce fertility level (Bongaarts, 1994; Ebigbola & Ogunjuyigbe, 1998; Jones, 2002; Economic Commission for Europe, 2002; United Nations, 2003). However, despite several initiatives and gamut of campaigns and programmes to propagate the usage of contraceptives in sub-Saharan Africa, the fertility rate still remained higher comparing it with other regions of the world. This raises the question of whether the knowledge or adoption of contraceptives is not widespread among the dominant operators of fertility (i.e. the women). It also requires understanding of different socio-demographic differentials that are associated with contraceptive usage in order to offer apposite suggestion towards reduction of fertility level in sub-Saharan Africa. The solution to this pertinent puzzle is inherent in underscoring the patterns of fertility among and within the various regions of sub-Saharan Africa. Thus, this paper examined the patterns of contraceptive usage within Nigeria from 1999 to 2008. It assessed, among others, the knowledge, attitude and practices of contraceptives among the subject matter and explained the socio-demographic profile that is related to current contraceptives usage.

### **Methods and Materials**

Due permission was sought in accessing the data sets of Nigeria Demographic Health Survey (NDHS) of 1999, 2003 and 2008 that were used for this study. Targeted cases were those related to married women of child bearing age (15-49 years). Variables of interests were sorted across the three data sets and merged into a single file. The data set was then analyzed using a combination of univariate and multivariate analytical techniques. Overall, only 34,919 women fall into this category across all the data sets. Only one model was formulated. The dependent variable is current contraceptive usage measured captured dichotomously as 1 or zero viz: (1) currently using or (0) currently not using any method while the independent variables are the socio-demographic characteristics of respondents such as age, usual place of residence, educational attainment, religion, desired number of children, and occupation. Univariate statistics was used to appraise the contraceptive knowledge among the respondents.

### **Literature Review**

The world population is a contemporary problem that is attracting global attention. Approximately seven billion people now inhabit the earth (PRB, 2011). The developing world population is currently expanding at an unparalleled rate of above 800 million every ten years and despite the foreseen decrease in growth during the 21<sup>st</sup> century, this size is expected to increase to from 4.3 billion in 1994 to 10.2 billion in 2010 (Bongaarts, 1994). While some developed countries such as Greece, Slovenia, Italy, Austria, Slovakia, Poland and Japan have achieved a zero population annual growth rate, Nigeria, Kenya, Congo and Malawi are battling with annual growth above 2.5 percent (United Nations Population Division, 2009; PRB, 2012). This view is in consonance with Malthus proposition that population is growing at a geometric progression and the likely pressure on resources cannot be overemphasized. However, out of every reason that has been ascribed as the cause of upsurge in population, the contribution of fertility remains formidably indisputable.

Generally, human fertility is a complex process among other demographic components that exerts lasting consequences on the population (United Nations, 1973; Bongaarts, 2005). While several literatures have covered analysis of fertility levels for both developing and developed nations with converging consensus that family planning is the panacea, the patterns of contraceptives usage within specific country and across countries are relative scarce in the literature. Fertility and future projected population growth are much higher in sub-Saharan Africa than in any other regions of the world, and the decrease in birth rates, which was already

moderate, has stalled even further over the past ten years (Bongaarts, 2008). Africa has the world's highest rate of natural increase in population, which is 2.5 percent per annum. African population is projected to grow at 132 percent by 2050, from about 700 million in 2002 to 1.6 billion people (Westoff, 2001; Westoff & Bankole, 2002; PRB, 2002). The average total fertility rate (TFR) for the whole of sub-Saharan Africa is above 5.0 children (PRB, 2011 and 2012). In the case of countries like Nigeria, Ghana, and Kenya, the fertility rates were 5.7, 4.1 and 4.7 compared to United Kingdom and Germany with 2.0 and 1.4 respectively (PRB, 2011). These are pointers to the fact that the continent is saddled with high birth rate.

The issue of high fertility has become paramount in the sub-Saharan African countries of the world today especially in Nigeria. Even though contraception has been introduced and a vast knowledge of it exists among women, it is still proving to be a major cause of concern (Moronkola, Ojediran & Amosu, 2006; Oyedokun, 2007). As mentioned before, Nigeria has contraceptive prevalence rate of 15 percent for all methods, compared to 73 percent in El-Salvador (PRB, 2011). Conceptually, contraceptive prevalence connotes the proportion of women of reproductive age (15-49 years) who are currently using (or whose partner is using) a contraceptive method at a given point in time (United Nations, 2001 and 2002; WHO, 2005). It is an indicator of health, population, development and women's empowerment and also serves as a proxy measure of access to reproductive health services that are essential for meeting most of the Millennium Development Goals (MDGs), especially the child mortality, maternal health, HIV/AIDS and gender related goals (Bongaarts, 1978; Donaldson & Tsui, 1990; United Nations, 2001 and 2002; WHO, 2005). The methods of contraception include clinic and supply (modern) techniques and non-supply (traditional) methods. The clinic and supply means consist of female and male sterilization, intrauterine devices (IUDs), hormonal methods (e.g. oral pills, injectables, hormone-releasing implants, skin patches and vaginal rings), condoms and vaginal barrier methods such as diaphragm, cervical cap, spermicidal foams, jellies, creams and sponges. The various traditional methods include rhythm, withdrawal, abstinence and lactation amenorrhoea and other folk methods believed to prevent pregnancy such as herbs, amulets, charms, etc (United Nations, 2001 and 2002; WHO, 2005).

Over the past 25 years, the world has experienced a contraceptive revolution in which the spread of contraceptive use within a society can be viewed as a diffusion process (Donaldson & Tsui, 1990; Montgomery & Casterline, 1993; Casterline, 2001). However, despite the fact that its knowledge has gained momentum, the expected impact is falling short of expectations. In Nigeria for instance, fertility has not drastically changed from what it was in the year 2003 (National Population Commission & ICF Macro, 2009). About seven out of 10 women in Nigeria know at least one modern method of contraception (National Population Commission & ICF Macro, 2004 and 2009). The level of spontaneous awareness of contraceptive is relatively low in Sub-Saharan Africa compared to Latin America and the Caribbean. It is also far below what is attainable in other less developed regions excluding Pakistan and Yemen. For instance, married women who could name a method spontaneously were 30 percent in Burkina Faso and Nigeria, 75 percent in Malawi and Zambia and 89 percent in Rwanda (Working Group on Factors Affecting Contraceptive Use in Sub-Saharan Africa, 1993). In terms of probed knowledge, more than 90 percent of married women in Malawi, Namibia, Rwanda and Zambia recognized a method while below 50 percent of their counterparts in Nigeria recognized a method (National Research Council, 1993).

## **Results and Discussion**

The demographic profiles of the respondents are presented in table 1. The mean ages of respondents in the three years surveyed are 30.5, 31.0 and 31.1 years respectively. The proportion of respondents in age group 25-39 years are relatively more than half of the total

married women across the three years (55.6% in 1999, 52.4% in 2003 and 53.9% in 2008). The least proportions were found among the age group 40-49 averagely at 21.1% across the years of survey (Table 1). The result revealed that more number of married women was enumerated in the rural areas than in the urban across the three surveys. The rural proportions revealed 69.4%, 63.7% and 72.5% for 1999, 2003 and 2008 respectively and the urban proportions show 30.6%, 36.3% and 27.5% in the same order (Table 1). Besides, the rural pattern shows increasing order while the opposite holds for the urban centers.

**Table 1: Demographic Characteristics of Currently Married Respondents (1999, 2003 and 2008)**

Variables / Year of Survey	1999		2003		2008	
	No	%	N	%	N	%
Gender						
Female	5,808	100.0	5,121	100.0	2,117	100.0
Age of Respondents						
Less 24 years	1,471	25.4	1,252	24.5	5,215	24.6
25-39 years	3,228	55.6	2,515	49.1	1,515	71.6
40-49 years	1,109	19.1	1,212	23.7	6,217	29.2
Mean Age	Mean age = 30.5		Mean age = 31.0		Mean age = 31.0	
Usual Place of Residence						
Urban	1,775	30.6	1,313	25.8	6,217	29.4
Rural	4,033	69.4	3,617	70.6	15,748	74.1
Highest Educational level						
No Education	3,082	53.1	2,515	49.1	1,515	71.6
Primary Education	1,297	22.3	1,212	23.7	5,215	24.6
Secondary Education	1,119	19.3	1,212	23.7	5,215	24.6
Tertiary Education	310	5.3	2,515	49.1	1,515	71.6
Religion						
Christianity	2,553	44.2	2,414	47.1	2,915	13.8
Islam	3,129	53.9	2,515	49.1	4,215	19.9
Traditionalist & Others	126	2.2	1,212	23.7	1,015	47.8

Husband's Occupation				
Clerical & Services	1,997	34.4	3	0.9, 3
Farming	2,542	43.8	2, 3	1 4
Manual Jobs	1,041	17.9	1, 3	3, 1
No Response	228	3.9	1, 2	3 1.
Respondent's Occupation				
Unemployed/Domestics	2,666	45.9	1, 3	7, 3
Clerical & Services	2,099	36.1	2, 4	9, 3
Farming	664	11.4	8 1	4, 1
Manual Jobs	325	5.6	4 7.	2, 9.
No Response	54	0.4		1 0.
Children Ever Born				
Zero Parity	571	9.8	5 9.	2, 8.
1- 2 Children	1,661	28.6	1, 2	6, 2
3- 4 Children	1,529	26.3	1, 2	6, 2
5- 6 Children	1,049	18.1	9 1	4, 1
7 Children and above	998	17.2	1, 2	4, 2
TOTAL	5,808	100.0	5, 1	2 1

Source: NDHS 1999, 2003 & 2008

In terms of educational attainment, higher proportions of women in child bearing ages are with no education. The result revealed that 53.1%, 52.2% and 51.3% are not educated in the years considered compared to 5.3% in 1999, 5.0% in 2003 and 6.3% in 2008 reported for tertiary education as shown in table 1. However, the proportion without education decreases as the years increases, while the proportion for higher education increases as the year progresses from 1999 to 2008. The data also shows that the proportion of women who had up to two children were 28.6%, 26.5% and 26.1% in 1999, 2003 and 2008 respectively. The proportion of women in zero parity experienced a constant increase from 9.8 to 8.8% in 1999, 2003 and 2008 respectively (Table 1). Occupation was regrouped into clerical and services, farming, manual

jobs and unemployed. The result of the analysis revealed that about one-third of the women sampled are unemployed or work as domestic assistants. The proportion however witnessed a progressive reduction from 45.9 percent in 1999 to 30.5 percent in 2008 as shown in Table 1. The proportion in clerical and services occupation that was 36.1 percent in 1999 increased to 42.9 percent in 2003 and thereafter declined to 39.6 percent. Farming also increased tremendously from 11.4 in 1999 to 19.9 percent in 2008. Improvement in these sectors could be traced to women empowerment initiatives embarked upon by various governments

### **Awareness and use of Contraceptives**

Generally, reproductive health knowledge is an indispensable factor in curbing maternal mortality and morbidity and could enhance the women's health seeking and attitude towards preventive and curative services. Although, the quality of such services might not be within their jurisdiction, it could propel the search or demand for quality services. Specifically, a major prerequisite for the use of contraception is the knowledge of the method. The level of awareness therefore depicts the extent to which information on available contraceptive options have been circulated to the population at large and is a pointer to possible assumption that all other things are equal. Notwithstanding that the index of reproductive health knowledge varied, only three indices were considered in this context namely: knowledge about contraceptive, awareness of STIs, usage of contraceptives. The knowledge of contraceptive methods was regrouped into three categories: (1) Knowledge of no method, (2) knowledge of traditional methods and (3) knowledge of modern methods.

Observation from the result revealed the following contraceptives were known to the respondents: pill, injection, IUD, diaphragm/foam/jelly, condom, female sterilization, periodic abstinence, withdrawal and others. The result of the analysis shows that the proportion of women who 'knows no method' that was 36.1 percent in 1999 declined to 21.9 percent in 2003 and later increased to 34.9 percent in 2008. The proportion that had never used any method was lower in 2003 compared to 1999 and 2008 as indicated in table 2. There is a progressive decline in the proportion of respondents using the traditional methods (from 13 percent to 4.2 percent between 1999 and 2008 as shown in table 2. On the average, the trial of modern contraceptives appreciated between 1999 and 2008 while the current users were relatively the same across the three years (8.3 percent in 1999, 8.7 percent in 2003 and 8.6 percent in 2008) while individual who had ever tried modern methods increased from what it used to be in 1999 (Table 2). Overall, the lower use of traditional contraceptive methods could imply that higher percentages of users are relying on modern contraceptive methods. The result of the analysis shows that women are gradually shifting to other sources of accessing contraceptive from government pharmacy. Similarly, the proportion that visit family planning centers reduces while the opposite holds for non-visiting.

**Table 2. Knowledge about Contraceptives (1999 – 2008)**

Years	1999		2003		2008	
Variables	No	%	No	%	No	%
Knowledge of any method						
Knows no method	2,096	36.1	1,127	21.9	8,354	34.9
Only traditional methods	143	9.6	104	7.4	359	1.5
Knows any modern methods	3569	61.4	3,926	76.1	15,241	63.6
Ever use of any method						
Never used	4,171	71.8	3,557	69.0	17,908	74.8
Used only traditional methods	577	13.0	399	7.8	1019	4.2
Used modern method	1,060	18.3	1201	23.3	5027	21.0
Current contraceptive method use						
No method	4,944	85.1	4,479	86.9	20,983	87.6
Traditional method	380	6.5	229	4.4	901	3.8
Modern method	484	8.3	449	8.7	2070	8.6
Current Cont. Method						
Not using	4,944	85.1	4,479	86.9	20,983	87.6
Pill	138	2.4	96	1.9	347	1.4
Injection	114	2.0	45	0.9	197	0.8
IUD	135	2.3	103	2.0	609	2.5
Diaphragm/foam/jelly	9	0.2	2	0.0	1	0.0
Condom	69	1.2	112	2.2	488	2.0
Female Sterilization	15	0.3	14	0.3	92	0.4
Periodic Abstinence	257	4.4	108	2.1	404	1.7
Withdrawal	69	1.2	67	1.3	337	1.4
Others	58	1.0	131	2.4	496	2.0
Visited by FP worker last 12m						
No	5,457	94.1	4,863	94.3	22,580	94.9
Yes	340	5.9	292	5.7	1211	5.1
Source Known for any method						
Govt Hospital	1,607	27.7	-	-	680	2.9
NGO	3	0.1	-	-	2	0.0
Private Hospital	431	7.8	-	-	919	3.9
Shop, Church, Friend	63	1.1	-	-	126	0.5
Don't know	3,579	62.9	-	-	21,616	92.6
Awareness of FP						
No	3,616	73.0	3,345	76.1	15,296	76.2
Yes	1,101	27.1	1,017	23.9	3,957	23.8
TOTAL	5,808	100.0	5,157	100.0	23,954	100.0

Source: NDHS 1999, 2003 and 2008



### **Logistic regression estimating the influence of women's socio-demographic characteristics on current usage of contraceptives**

The model estimated the significant influence of women socio-demographic characteristics on the current contraceptive usage. Various key factors considered include: age, usual place of residence, educational attainment, religion affiliation, desired number of children of children and occupation.

The result indicates that educational attainment (irrespective of the level) is a significant factor in the determination of contraceptive usage. Women in child bearing age who had primary, secondary and tertiary education are more likely to use contraceptive compared to women who have no education across the three years surveyed. The p-values are persistently equal to 0.000 across the data sets (see table 3). Respondents who practice Islam will less likely use contraceptive compared to their counterparts in other religions. This trend was however reversed in 2008 with a positive  $\beta$  (0.127) as shown in table 3. Further observation revealed that women who desired more children or undecided are less likely to use contraceptives compared to women who desired no more children. General observation about the occupation revealed that women who were not working or participated only in the domestic jobs might not likely use contraceptives. Owing to the fact that lack or low income is the feature of such group of people, economic weaknesses could be the reason for this observation. Although, the observation is general across all occupation categories, the  $\beta$  coefficients revealed that unemployment will exert negative influence on the usage of contraceptives among the studied population. Among other important findings from this analysis is that age group 20-29 years demonstrated more likelihood of using contraceptive compared to other age groups. Women in age 15-19 and 40-49 years are less likely to use contraceptive than their counterparts in age 20-29 years (Table 3). All categories of age are statistically significant at p-values = 0.000. The strength of the model is revealed by the average values of Cox & Snell R Square (13%), Nagelkerke R Square (24%) and overall percentage of 86.5 percent for all the years surveyed.

### **Conclusion and Recommendations**

The study examined the variations in demographic factors influencing contraceptive usage among married women in Nigeria using survey data sets of 1999, 2003 and 2008. The study is retrospective study comparing observations across the three years and using a standardized data from Demographic Health Survey. The study confirmed, among other things that, educational attainment, usual place of residence and age are universal correlates (i.e. determinants) of contraceptive use among women of child bearing ages. This finding buttressed the report from Martin (1995), Arokiasamy (2002), Khan and Khan (2007), to mention but few. Also, the desired number of children could be intermediated with other factors to influence contraceptive use among the target respondents. The fact that urban residence shows higher likelihood contraceptive usage indicates that deployment of contraceptives to rural areas would be necessary. Improvement in access to education among the women is also germane to the adoption and usage of contraceptives. The decline and increase in modern and traditional contraceptives usage respectively as depicted in this study demands attention. The observed decline in the use of traditional contraceptive methods could imply that higher percentages of users are relying on modern contraceptive methods. The study thus recommend the integration of traditional methods into the current family planning healthcare services which will comprise of medically trained personnel and socially recognized role models like religious leaders to cater for the contraceptives needs of women. Governments are also enjoined to provide enabling opportunity for women to have more access to

employment in order to enhance economic empowerment that may translate to increasing in contraceptive usage in the future.

**Table 3: Logistic regression estimating the influence of women's socio-demographic characteristics on current usage of contraceptives**

Variables/Years	B			Sig			Exp		
	1999	2003	2008	1	2	2	1	2	2
Usual place of residence									
Rural	RC								
Urban	0.206	0.359	0.444	0	0	0	1	1	1
Educational attainment									
No education	RC								
Primary education	0.601	0.750	0.990	0	0	0	1	2	2
Secondary education	0.959	1.245	1.460	0	0	0	2	3	4
Higher education	1.325	1.379	1.840	0	0	0	3	3	6
Religion Affiliations									
Christianity	0.277	0.002	-0.070	0	0	0	1	1	0
Islam	-0.429	0-.621	0.127	0	0	0	0	0	1
Traditionalist	RC								
Desired Number of Children									
Desire more children	-0.507	-0.026	-0.795	0	0	0	0	0	0
Undecided/unsure	-0.055	0.019	-0.773	0	0	0	0	1	0
Want no more	0.196	0.938	0.239	0	0	0	1	2	1
Never had sex	RC								
Occupation									
Not working	-0.153	-0.228	-0.594	0	0	0	0	0	0
Professional	0.545	0.329	-0.276	0	0	0	1	1	0
Sales & services	0.629	0.311	-0.130	0	0	0	1	1	0
Agric & Allied	0.522	0.311	-0.260	0	0	0	1	1	0

Housewives & Domestics	RC				
Age group					
15-19 years	-0.326	-0.565	-0.790	0.000	0.004
20-29 years	0.413	-0.093	.0157	0.000	1.001
40-49 years	0.275	-0.448	-0.258	0.000	1.000
30-39 years	RC				
Constant	-2.285	-1.872	-2.082	0.000	0.000
Cox & Snell R Square	0.147	0.123	0.130 (Average =	RC =	
Nagelkerke R Square	0.259	0.227	0.247 (Average =	nce	
Overall Percentage	85.1	86.9	87.6 (Average =	ry	
			)		

Source: NDHS 1999, 2003 and 2008

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### **Acknowledgement**

We acknowledge the MEASURE DHS that permitted us to use their survey data set of  
1999, 2003 and 2008.

# Indigenous Akan Political System: A Religious Overview

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## **Abstract**

The African before the coming of the colonialists practiced their own brand of government which changed considerably with the advent of white rule. The impression was created that the African in general and the Akan in particular did not have a system that took into consideration the people's consent in the running of the affairs of state. The religious undertone of the Akan political system was overlooked because the colonialist did not factor into the administration of the state the traditional cultural values of the people. This paper explores the indigenous Akan political ideas and values of politics with a view to establishing its democratic credentials. Using the phenomenological principle, the paper described the indigenous Akan political system and showed how it functions in the society. The paper then investigates the religious underpinning of the indigenous political system of the Akan and concluded that the indigenous religion of the Akan has influenced its indigenous political system.

**Key Words:** Indigenous religion, Political System, Democracy. Akan

## Introduction

Since the coming of the British colonialists, Ghana's political terrain has changed considerably. The indigenous political system that existed before the advent of the colonists suffered a great deal. The system which revolved around indigenous institutions such as chieftaincy and priestly functionaries, were supplanted by those of the colonialist.

The political institutions that were introduced by the colonial government, modeled on what was in their home country did not function properly (Gyekye 1997). Gyekye gives some reasons why the political system put in place by the colonist did not function properly. He says:

*The African people simply did not have the ability effectively to operate institutions of government that were entirely alien to them, institutions that had not taken root in ... their political culture and, consequently, failed to elicit cultural understanding which they had no emotional, ideological, or intellectual attachments whose nuances could not be fully appreciated (p.115).*

It is in the light of these confusions and the lack of effective operations of the alien political institutions that there is the need to go back and look at the indigenous political system and find out how the indigenous can be married with the modern political system for effective governance.

I will agree with participants of a three-day conference in 1993 on the future of Africa that "it is important that traditional cultural values be integrated into the process of developing better governance" (Gyekye, 116). Consequently, this paper will examine the indigenous political system of the Akan of Ghana drawing parallels of its principles in the light of post-independent political arrangements and their implications for governance in Africa in contemporary times.

## Akan Political Structure

The Akan political system according to Gyekye (1997:121) has as an outstanding feature of a decentralised character. The family makes up the base of the political structure. Indeed the political nature of the family rests on a hierarchical structure headed by the family head referred to as *Abusuapanyin*. The *Abusuapanyin* is assisted in his duties by a select number of heads from each household within the family, representing each of the ancestral offspring traceable to the first ancestor/ancestress (Awoonor 1990). The role of the family council as Awoonor puts it "is essentially a political one as it covers the welfare, material and spiritual, of each single members of the family" (9). Above the family unit is the village council headed by an *Odikro* (village head). The village chief is assisted by the various family heads and the *Obaapanyin* (senior woman) to run the affairs of the community.

A group of villages form an *Omansin* (Town) headed by an *Ohene* (Chief) and also assisted by his elders and an *Obaahema*. The *Obaahema* or *Obaapanyin* could either be the mother, mother's sister, a sister or a mother's sister's daughter of the male office holder (Arhin 1985). At the apex of the Akan political structure is the *Oman* (State) headed by the *Omanhene* (paramount chief). He is also assisted in his duties by a council made up of the sub-chiefs and *Obaahema*. According to Gyekye:

*Each town or village has a chief and a council of elders, these elders being the heads of the clans. The chiefs preside at the meetings of the council. In the conduct of its affairs, each lineage in a town, or each town in a paramountcy, acts autonomously, without any interference from either the chief --- or the paramount chief --- A decentralized political system is thus an outstanding feature of the traditional Akan political system. Just as each town or village*



*has a council --- The state council presided over by the Omanhene, draws its membership from the chiefs of the towns and villages constituting the state (1997:121).*

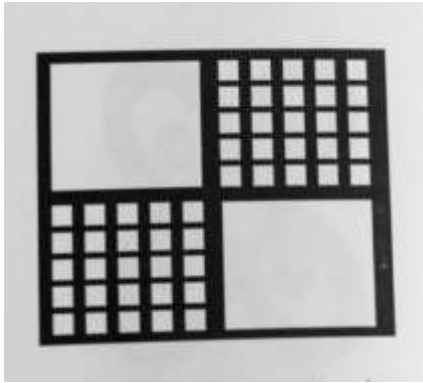
### **Democratic Principles of the Akan Indigenous Political System**

The concept of democracy is not alien to the indigenous Akan political system because for any political system to be considered as democratic, the central role played by the people must be recognized. Democracy has been widely explained as the government of the people, by the people and for the people however, this definition according to Gyekye “implies as it must, that the standard by which to judge the democratic nature of a political system is the degree of adequacy allowed for the expression of the will of the people, and the extent to which the people are involved in decision-making processes” (1997:124). I will however, describe democracy in the indigenous Akan political system to mean the consultative nature by which political office holders are elected. This consultative process ensures that everyone who has a voice in the choice of the office holder has the opportunity to voice their approval or disapproval of the choice before the final decision was arrived at. I must indicate that among the Akan, even though it is customarily required of the *Obaahemaa* to nominate a candidate for a vacant stool, she does not carry out this important duty alone but in consultation with others. The Asante example as examined in the following paragraphs shows how when the *Asantehemaa* was going to nominate a new *Asantehene*, she relied on the collective wisdom of not only the *Abusuapanyin*, but on the wisdom of some of the paramount chiefs of the Asante nation. To what extent can the indigenous Akan political system be said to be democratic? How does the political system allow for the free expression of the people’s free-will? Again, does the system allow for popular participation of the people in the political affairs of the state? In addressing the first question, a brief description of two Akan symbols encoding Akan political beliefs will suffice.



#### **Tumi Te Se Kosua**

The first is the “*Tumi te se kosua*” literally power is like an egg. This symbol connotes the delicacy of political power, fragility of democracy and self restraint of political leadership. This symbol is derived from the Akan proverbial saying which is also captured in artistic works on top of the linguist staff: “*Tumi te se kosua, woso mu den a, epae: ne se wo anso mu yie nso a, efiri wo nsa bo famu ma epae*”. The aphorism can be interpreted as: ‘Power is as fragile as an egg, when held too tightly, it may break, if it is held too loosely, it might fall and break.’ What this symbol suggests is the fragility of political power. When seen as a symbol of democracy, it connotes the delicacy of power. Power wielded in one hand is not safe. By the same token power wielded by an Akan chief is not absolute, nor is it expected to lead to abuse of power. The chief is enjoined to exercise his power justly and with caution. If he fails, he will incur the wrath of his people.



*Kurontire Ne Akwamu*

The second symbol that brings to the fore the democratic credentials of the indigenous Akan political system is *kurontire ne akwamu*. This is a symbol of democracy, participatory government and plurality of ideas. It comes from the saying: *Obaakofo mmu Oman* which literally means, one person does not rule a nation. The, Akan chief is assisted in his duties by a council that plays an important role in helping the chief to administer the state. Among the duties performed by the council includes being responsible for the election of a new chief in conjunction with the *Obaahemaa*, advising the chief on all matters affecting the state and acting as a court to rule on any charges that may be brought against the chief (Arhin,1985:19; Gyekye1997: 125). One can infer from the above that the chief is not to rule all alone but in concert with others. We will return later to look at the religious significance of the two symbols.

In addressing the second and third questions, we will take a look at the institution of chieftaincy which Gyekye described as “the linchpin of the democratic process in the Akan political system” (1997:120). Among the Akan, to qualify to be a chief, one must hail from the appropriate royal lineage. A ‘royal’ is normally determined to be the one whose forefathers founded that town or village. The royal status of that lineage is recognized and accepted by the people (Gyekye 121). Article 277 of the 1992 constitution of Ghana gives a definition for a chief. It says a:

Chief means a person, who, hailing from the appropriate family and lineage, has been validly nominated, elected or selected and enstooled, enskinned or installed as a chief --- in accordance with relevant customary laws and usage.

The processes involved in the selection or nomination of an Akan chief followed democratic tenets because as the maxim goes, no one person was pre-destined to be a chief at birth. Anytime a stool became vacant, there were always eligible contenders to the stool. In the events leading to the nomination of a new *Asantehene*, there were seven contenders to the vacant stool, the Golden Stool (Odotei and Hagan 2003:5). In selecting a chief, the processes must be fair so as to have the nominee receive approval from the kingmakers and even the contending parties (Arhin 1985: 32; Gyekye 1997: 124; Odotei & Hagan 2003:5).

In discussing the nomination and enstoolment of an Akan chief, we relied heavily on the accounts of Odotei and Hagan (2003) that documented the nomination and enstoolment of Otumfuo Osei Tutu II as *Asantehene* (King of Asante) in 1999. The processes of the selection and nomination began with the traditional responsibility of the *Asantehemaa* (Queen mother), Nana Afua Kobi Ampem II, nominating a successor to the vacant Golden Stool. She performed this important task with the help of the *Abusuapayin* (family head) of the *Royal Oyoko* clan (the clan from which eligible contenders to the vacant Golden Stool must hail from) and the *Amanhene* (Paramount Chiefs) of Kokofu, Juaben, Bekwai, Nsuta and Kuntense. After the

*Asantehemaa* had made the choice, she was traditionally required to present the candidate to the *Gyaase* (members of the royal household). The *Gyaase* by tradition has the right to reject or accept the candidate. After the acceptance of the candidate, Barima Kwaku Dua, the son of the *Asantehemaa* by the *Gyaase* as the *Asantehene-elect*, the nominee was presented to the Kumasi Traditional Council (KTC). The KTC also accepted the nominee after deliberations and he became the *Kumasihene* (Chief of Kumasi). The next step of the enstoolment process was the presentation of the nominee before the Asanteman Council which comprised all the *Amanhene* of the Asante kingdom where they were formally informed of the *Asantehemaa's* choice and the subsequent acceptance by the *Gyaase*. The *Asantehene-elect* had to be accepted by the *Amanhene* of the kingdom before he assumed the role of the occupant of the Golden Stool. The candidate was not imposed on the people indeed at every level of consultation; the king-elect had to be accepted by the kingmakers. The *Asantehene* consequently emerged as the product of *Asanteman's* freewill to choose a leader of their choice. Asanteman exercised their freewill to choose their king through their representatives on the Asanteman Council. The King-elect was seen as the choice of the people because he was selected after the people's representatives have exhausted all the processes of selecting a new chief. We will agree with Rattray that, "among the Ashanti there was no such thing as government apart from the people" (1923:407). Rattray's position brings to the fore the point being made that before any person ascend to a vacant stool among the Akan, his choice must have the approval of his people. This approval is sought from the *Gyaase*, the keepers of the royal household.

### **Role of the *Nkwankwaa* (Asafo) in the Political System**

In arriving at an accepted candidate for a vacant stool, the role played by the youth of the community cannot be overlooked. The youth among the Asante are known as *Nkwankwaa* while the Fante calls them *Asafo*. These young men have a role to play in the political system of the Akan. They formed the fighting force of the indigenous society. Since this function has been taken over by the modern state, they have rechanneled their energies to ensuring the community projects and programs are completed. In the political system of the Akan, even though the *Nkwankwaa* do not have a direct role to play, their views are not disregarded when certain decisions are to be taken. One area that their views are considered is the election of a new chief. Busia (1968) discussing the roles played by the *Nkwankwaa* on the nomination and enstoolment of a chief makes the point that the *Nkwankwaa* have a recognized and effective way in which they expressed their will not only about the nomination and enstoolment of the chief but on all matters affecting the community. The *Nkwankwaa* though an unofficial body has as its head the *Nkwankwaahene*. Though he had no role on the traditional council, he was recognized as the representative of the commoners and the elders considered any representation he made to them (Busia, 10). Busia asserts that the *Nkwankwaahene's* position was of political significance as it enabled the commoners to have a say in the matters of governance. In the next section we will try to bring out the religious significances of the indigenous political system of the Akan.

### **Indigenous Religion and the Akan Political System**

The Akan indigenous religion permeates every aspect of their lives such that their political system also has a heavy dose of religion influencing it. Political authority is vested in the chief who is not only their political head but also their religious leader. The chief does not become a chief not until he has been formally introduced to his ancestors in the *nkonuafieso* (stool room). It is in the stool room where the blackened stools of his ancestors are kept that he is formally installed as a chief (Busia 1968; Arhin 1985). The rituals of the stool room help to incorporate the chief into the worlds of the sacred and profane. The chief becomes both sacred and profane personage. In ensuring that the chief's person is protected, the Akan chief makes

use of charms and amulets for such purpose. The Akan believe that ancestors act as 'supervisors' ensuring that the chief and his elders manage the state in honesty and sincerity. The ancestors, though dead, are still believed to show interest in the affairs of the living. Thus Busia postulated that the ancestors "are believed to be the custodians of the laws and customs of the tribe. They punish with sickness or misfortune those who infringe them" (p. 14). The chief as the head of the Akan political system has an intermediary role to play. This he does by ensuring the well being of the society, through having a good relationship with his ancestors on whom he depended for health and protection for himself and his people (Busia, 1968). The indigenous Akan religion ensures the political survival of the people.

### **Religious Significance of the Symbols**

We will now return to the religious significance of the two political symbols earlier discussed. First the egg is not only a symbol of democracy; it also has its own religious importance. Eggs feature prominently in religious ceremonies of the Akan of Ghana. During ritual ceremonies performed for girls as part of their puberty rites, cooked eggs are fed to the neophyte who is not allowed to bite or chew the egg. If she did the Akan believed that the girl will not be able to have children in the future as she will be deemed to have "chewed" her babies Sarpong (1977:34) reporting on the puberty rites among the Ashanti remarked:

*The old woman here covers the girl's head - - - she then puts a boiled egg, without the shell into the girl's mouth - - - The girl is required to masticate and swallow the egg without using her teeth, for to bite the egg is to bite her seed as the Ashanti say.*

Egg symbolizes fertility and fruitfulness. Its association with the political system and democratic tenets indicates the people's intention to be fruitful in their deliberations at council. Egg as the embryo also signified the life force of the community. It gave vitality and strength to the nation, renewal of life, perpetuity of life and the continuity of the state. This becomes apparent when eggs are added to soot collected from the kitchen to blacken the ancestral stools which represent the souls of the community. Sarpong (1971) gives the religious significance of the egg in the ritual of blackening the stool of a departed chief. He says:

*Eggs then are used to portray the peaceful nature of the stools and those they represent. When an Akan person thinks he is defiled and wishes to cleanse himself, he always uses eggs in the ceremony, to show that his soul is now at peace (p. 43).*

The second symbol *Kuronti ni Akwamu* religiously signifies the point that the dead meets with the living. Intrinsically, the family comprised the living, dead and yet unborn. This emphasises the Akan belief in the spiritual and physical realms of life. In matters affecting the future of the community, the Akan is not oblivious of the physical and spiritual dimensions of life. This knowledge is not lost on the traditional council either. In deciding on any issue, the council does not rely on its collective wisdom alone but also rely on the wisdom of the ancestors in arriving at an acceptable decision. In so doing the living, dead and yet unborn conjoin to come out with an acceptable decision.

### **Election of an Akan Chief**

The head of the traditional political system among the Akan is the Chief and in his selection and enstoolment, religion plays a major role. The elected chief is considered a representative of the ancestors because he sits on their stool and does their bidding (Busia 1968:27). The processes that lead to the chief's enstoolment are religious. After the nomination and acceptance of the chief by the Gyaase and the people, a day is fixed for his enstoolment in

the stool room, *nkonuafieso*, where the blackened stools of previous stool-holders were kept (Arhin 1985:25). It is in this room that the chief-elect is formally introduced to his ancestors. Busia gave an account of a stool room enstoolment ritual of an Akan chief. He says:

*---the esoteric rite of the chief's installation is when the chief-elect is led into the stool-house where the blackened stools of his ancestors are kept. There, more than in any place, the spirits of the ancestors are believed to be present. Upon the blackened stool of the more renowned of his ancestors the chief is lowered and raised three times. He is then enstooled - - - Thence forward he becomes the intermediary between the tribe and his royal ancestors without whose aid misfortunes would befall the community (p.26).*

### **Oath of Service (Public Rites)**

The Akan chief after the esoteric rites in the stool-room must publicly swear an oath to the entire *Oman* (state) to be good leader. Oath taking has various forms. The one being referred to in this article is the oath of service taken by the new chief before his people. An oath is a prerogative writ with a ritual force that brings dire consequences when broken (Dovlo 2006:15; Odotei & Hagan, 2002: 17). Among the Akan, a new chief must take an oath before being enstooled. An example of a public oath of a new chief will suffice. It was the oath taken by Otumfoɔ Osei Tutu II, the Asantehene, on his enstoolment.

### **Twɛ**

Osei ne Poku Nana ne me  
Bonsu Nana ne me  
Agyeman Nana ne me  
Me wofa ne Kwame Kyeretwie  
Opoku Ware II yɛ me nua panin  
Sɛ ennɛ me nua Panin Opoku Ware kɔ n'akuraa na Kumasefoɔ  
Adaworama, mode ne tuo ama me,  
sɛ mamfa anhwe mo so hwɛpa, amma mo  
amamuo pa, sɛdɛɛ me nananom yɛɛ a,  
meto Ntam Kɛsɛɛ

### **English**

I am the grandson of Osei and Poku  
I am the grandson of Nana Bonsu  
I am the grandson of Nana Agyeman  
Nana Kwame Kyeretwie was my uncle  
Opoku Ware II was my senior brother

Today, my elder brother Opoku Ware is gone to the village and by the grace of Kumasi people you have given his gun to me to rule

If I do not rule well

If I do not govern the state and protect you well as my forefathers did,

**I violate the great oath** (emphasis theirs)

(Odotei and Hagan, 2003:16-17)

Before the chief took the public oath of service, he was advised by the sub-chiefs to rule with the consent of his people. He was to respect them and to treat his people with dignity. The admonishment which is always preceded by “we do not wish” is not only politically significant as he is not expected to rule as he wishes, but also religiously significant as the chief becomes the representative of the ancestors and must thus do their bidding by serving the people well or incur the wrath of the ancestors. The oath confers legitimacy on the chief and elicited allegiance from his people. The oath is to ensure the promotion of human rights, good governance and government of consent. The oath helps to establish the democratic principles of the Akan by making the chief realise that his new position was not by hard work but because his people had agreed to hand over to him the stool of his ancestors. The oath taken by the new chief enhances the democratic credentials of the indigenous Akan political system. Through the oath, the chief indicate his preparedness to be accountable to his people and ensures that he rules with honesty and sincerity. Through the oath, the new chief places his life in the hands of his people to deal with him if he flouts the injunctions of the oath.

### **Taboos Governing the Indigenous Political Office**

Taboos are important prohibitions that are put in place by the indigenous African people to help regulate their lives. Taboos have ritual forces and any infraction if not well handled incurs the wrath of the gods and ancestors. The study of the institution of chieftaincy without the knowledge of stool taboos would be tantamount to breaking not only the spiritual reinforcement of the society, but also the total religious and moral fabric woven by the creator, the ancestors, deities and the supernatural beings (Brempong 2006: 213).

The Akan considers the person of the chief to be sacred the moment the enstoolment rites are completed. The chief is expected to observe certain taboos such as not walking bare footed, not eating in public and behaving in a manner considered to be disgraceful (Nukunya 2003; 77). The Chief is the focus of the unity of the tribe. “His ritual functions are connected with ceremonies through which the people express their reverence for the ancestors and gods... The chief’s position is bound up with strong religious sentiments” (Busia 39). Taboos have a direct bearing on the democratic practices of the indigenous Akan political system. Taboos act as ‘constitutional’ obligations and injunctions on a new chief. He is to follow these ‘constitutional’ provisions if he is to maintain his grip on the stool of his ancestors. Taboos help to enhance the democratic credentials of the Akan political system since any infraction of these injunctions may lead to the destoolment of the chief. It helps to make the chief accountable to his people since any infraction will lead to dire consequences for the chief.

### **Consequences of Breaking the Taboos**

Because the chief’s position is bound by ritual forces, any infraction of these forces could lead to his destoolment. Taboos provide the chief the basis for religious discipline and ethics. A case of destoolment charges were leveled against one Nana Kwakye Ameyaw II, the then *Omanhene* of Techiman Traditional Area in the Brong Ahafo Region of Ghana in 1974. His people leveled forty-four (44) charges against him. Thirty-eight (38) of the charges were dismissed by the judicial committee of the Brong Ahafo Regional House of Chiefs. The case eventually ended up at the Supreme Court of Ghana. On March 30<sup>th</sup>, 1988, the five member panel gave their judgment. Brempong reproduced charge number two: Breach of taboo in crossing the *Takyia* River. The judgment reads:

*Charge 2 is the breach of taboo in crossing the Takyia River. The appellant admitted driving along a bridge that the river. He was not blindfolded as custom demanded. He admitted that obviously the incongruity of making any associations relating to the control of a vehicle over a bridge blindfolded must*

*have clawed on him. Consequently he explained that the bridge with its rank growth of vegetation at the sides would obscure the view of the river, and in any case the custom was outmoded and obsolete. But the machinery for declaring a custom obsolete existed in the Traditional Council of which the taboo persisted and the only possible conclusion was that the appellant was condemned by his own admissions (Brempong 227).*

I agree with Brempong when he says that “Nana Kwakye Ameyaw II offended the supernatural powers by breaking the taboos through exhibiting anti-ritual behavior” (277). The Chief was thus destooled on the 30<sup>th</sup> of March, 1988 as an *Omanhene*. The place of circular courts in chieftaincy disputes has enhance its democratic principles as the chief can no longer rule with arbitrariness as the circular courts act as independent arbiters to bring to order any chief who may tend to act undemocratically or flout the customs and traditions of his people.

### **Conclusion**

The indigenous political system of the Akan has undergone various changes with the advent of colonial rule and decades after colonialism, the indigenous political system still continues to suffer from its relics. This has not, however, made it to lose its democratic credentials apparently because the political system has continued to evolve to make itself relevant to the contemporary political climate.

The indigenous political system of the Akan has as its main engine of growth, the chieftaincy institution. The institution is firmly rooted in the religion of the people therefore through the observance of stool taboos and other ritual acts such as sacrifice and libation, the indigenous political system has remained as relevant as it was decades before the dawn of colonialism. It has also continued to exhibit its democratic tenets under the watch of the indigenous religion.

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# Sources of Complexity in the Yorùbá Numeral System

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## **Abstract**

A lot of research into the counting system of the Yoruba language has focussed on how to simplify the system. This paper attempts to describe the Yoruba counting system by relying on its internal logic, and explain, not merely identify, the sources of complexity. The complexity of numeral derivation in Yoruba is due to many factors. Higher numbers are compounded from the cardinal forms and the process of compounding involves series of mathematical operations. The products of these operations are then subjected to complex phonological processes which produce forms that are sometimes radically different from their constituent bases. Yoruba also has a multiplicity of number scales (or 'bases') and employs some 'irregular', non-analytic numbers. Finally, in higher numerals, place value changes are sometimes unpredictable.

Keywords: *decimal, number system, vigesimal, Yorùbá.*

## 0 Introduction

A lot of research into the Yoruba numerals has focussed on how to reduce the complexity of the system. These works include Armstrong (1962), Oyelaran (1980), Fakinlede (2003), and Awobuluyi (2008). Olubode-Sawe (2010a) also suggests some methods of popularizing a new number system after it has been standardized. Decimalization is the focus of these proposals which have been reviewed in Olubode-Sawe (2010b). The sources of complexity are sometimes mentioned but not usually explicated.

Armstrong (1962) considers Yoruba numerals ‘a fascinating chapter in the history of mathematics and the development of human thought.’ Bamgbose (1986) also refers to ‘the problem’ of Yoruba numerals while Awobuluyi (1994) mentions the ‘very cumbersome and complicated manner’ of deriving them. David-Osuagwu (2009), introducing number base in a primary school text, describes the Yoruba counting system as ‘even more complex’ than counting systems in some other African languages because it includes multiplication and subtraction. This paper attempts to describe the Yoruba counting system by relying on its internal logic, not by how it differs from the Hindu-Arabic system, and identifies what the sources of complexity. The data on Yoruba traditional numeration used here is generated from Abraham (1958).

Yoruba has four sets of whole numbers. There is a cardinal series; a long ‘counting series’ devised for counting cowries; an ‘adjectival series’; and an ordinal series as shown in Table 1 below:

**Table 1: The Four Sets of Yoruba Numbers**

	<i>cardinal</i>	<i>long</i>	<i>adjectival</i>	<i>ordinal</i>
1	òkàn	oókan/ení	kan	ìkínní
2	Èjì	eéjì	méjì	ìkejì
10	ẹwá	eẹwáá	mẹwáá	ìkẹwáá
14	ẹrínla	eẹrínláá	mẹrínlá	ìkẹrínlá
19	òkàndínlógún	oókàndínlógún	mọkàndínlógún	ìkọkàndínlógún
20	ogún	---	ogún (+N)	(N+) ogún
30	ogbòṅ	---	ogbòṅ (+N)	(N+) ogbòṅ
35	àrúndínlógójì	aárúndínlógójì	márúndínlógójì	ìkarúndínlógójì
79	òkàndínlógórin	oókàndínlógórin	mọkàndínlógórin	òkàndínlógórin
100	ogórún-ún	---	ogórún-ún (+N)	(N+)ogórún-ún
148	èjìdínlááádòjọ	eéjìdínlááádòjọ	méjìdínlááádòjọ	ìkejìdínlááádòjọ
200	igba	---	igba(+N)	(N+)igba
10000	egbàárún	---	egbàárún (+N)	(N+) egbàárún

The derivation of the counting, adjectival and ordinal series has already been discussed (see Awobuluyi (2001), Olubode-Sawe (2010)). There are no long forms for *ogún*, *ogbòṅ* and round figures above 100. In fact, the long forms for 11-99 are based on the occurrence within them of *òkan* ‘one’ to *ẹsán* ‘nine’. The adjectival and ordinal forms of those larger numbers also have the same shape as the cardinal numerals but the position of the noun is shown in brackets. ‘10,000 books’ is referred to in Yoruba as *egbàárún iwé* while ‘the 10,000<sup>th</sup> book’ is referred to as *iwé egbàárún*.

The complexity of numeral derivation in Yoruba is due to many factors, including but not limited to what follows. Higher numbers are compounded from the cardinal forms and the process of compounding involves series of mathematical operations. The products of the

mathematical operations are then subjected to complex phonological processes which produce forms that differ, sometimes radically, from their constituent bases. Yoruba also has a multiplicity of number scales (or ‘bases’). Finally, in higher numerals, place value changes are unpredictable. These issues will now be discussed in turn.

## 1 Mathematical Processes in Yoruba Number Derivation

One of the sources of complexity in the numeral system is that number derivation in Yoruba is by a compounding of the cardinal numbers, involving several mathematical operations: addition, subtraction or multiplication and bracketing. In some numbers, all four processes may occur.

### 1.1 Addition

Addition occurs in isolation only in non-derived numbers: *ẹwá* (10), *ogún* (20) and *ogbòṅ* (30). In derived numbers, it occurs in combination with the other processes. Typically, only *oókan* (1) to *ẹ́erin* (4) can function as addends to decades, other numbers in a decade being generated by subtraction of *aárùn-ún* (5) – *oókan* (1). As the examples 11-183 in Table 2 (see the Appendix) show, addends are positioned before the number they are added to, followed by *lé* (exceeds) or *lé ní* (exceeds by) (Oyelaran 1980). Note, however, that in higher numerals, there could be exceptions, as the number words for 187 and 50009 show below. In higher numbers, *mẹwàá* (10) and *okòó* (score) are addends in 290 and 223 respectively. Derived numbers can also be added: 13 in 213, 100 in 3100 and 600 in 5678. The changing position of the addends is one source of complexity.

In the case of numbers up to 99, the position of the addend is a reversal of the Hindu-Arabic system. After that, it would seem that addends follow the Hindu-Arabic pattern with the addends being placed after the base number, introduced by *ó lé* (it exceeds). Take for example *igba ó lé mètàlàá* (213 = 200 + 13) and *egbòkàndínlógún ó lé ogòrùn-ún ó lé kan* (3901 = 200 x (-1 + 20) + (20 x 5) + 1). In the latter example, addition is recursive, 100 and 1 being added to 3800 in turn. However, there are counter examples in *okòó lé légbèta* (620 = 20 + (200 x 3)) and *òrìnlúgba ó lé mẹwàá* (290 = ((20 x 4) + 200) + 10). In the first, the addend is placed before the base number, and the latter number has addends before and after the base number.

### 1.2 Subtraction

Subtraction can occur in isolation in both derived and non-derived numbers, and in combination with the other processes. Typically, only *àrùn* (5) – *òkan* (1) can function as subtrahends from decades and up to 179, are positioned before the number from which they are subtracted, introduced by *dín* or *dín ní* (deficit). After that, they are positioned after the minuend, in Hindu-Arabic order of place value. The changing position of the subtrahends is another source of complexity.

The decades from 40 to 180 are generated as multiples of twenty, and the intermediate numbers 50 to 170 are computed as multiples of twenty with ten subtracted from the product. Thus 50 is reckoned as three-twenties less 10 (*àádòṅta < ẹwá dín nínú ogóta*) and 170 is nine-twenties less 10 (*àádòsàn-án < ẹwá dín nínú ogòsàn-án*). The process of subtraction is also used in generating odd multiples of hundred from multiples of *igba* (200): see 500 (*ẹ̀ẹ̀dẹ̀gbèta < òrùn dín nínú egbèta*) and 700 (*ẹ̀ẹ̀dẹ̀gbèrin < òrùn dín nínú egbèrin*) in Table 3 (See the Appendix). Subtraction is also involved in generating some odd multiples of thousand from *egbèwá* (2000). For example, 5000 is reckoned as three two-thousands less one thousand (*ẹ̀ẹ̀dẹ̀gbàáta < egbèrùn dín nínú egbèwá mètà*).

There is a major problem associated with this: the subtrahends 100 and 1000 have identical phonological form: *ẹ̀ẹ̀dẹ̀*; hence the Yoruba proverb: *a à kì í sáájú ẹ̀lẹ̀ẹ̀dẹ̀* (you don't

pre-empt one who says, ‘èédé...’), for there is no knowing whether his ‘èédé...’ means a deficit of 100 or 1000. The two forms are generated by different phonological processes, which will be discussed later.

### 1.3 Multiplication

Multiplication is used in generating decades, hundreds and thousands. Multiplicands (shown in bold in Table 4 in the Appendix) are base numbers *ogún* (20) *igba* (200), and derived bases *egbàá* (2000) and *egbàáwàá* (20000). The decades from 40 to 180 are generated as multiples of twenty, and higher numbers as multiples of 200, 2000 or 20000 as may be appropriate. 10, 100, 1,000 and 10,000 never act as multiplicands, though the first three do serve as subtrahends to generate intermediate decades, hundreds and thousands. In addition, 10 is also a multiplier in generating 2,000 from 200, and 20,000 from 2,000.

In some higher multiples, e.g. 600-18000, there is a superficial confusing fluidity in the base number to be used as a multiplicand: seemingly swinging from 200 to 2000 and then back to 200. A closer look would show that the choice of multiplicand to be used is determined by the need to keep the multiplier within the range of 2-19. For example, from 600 – 3800, the multiplicand is 200 and the multipliers 2-19. Then from 4000 to 38,000, the next convenient multiplicand is 2000, with the same multipliers earlier stated.

Starting from 40,000 (*egbàáwàá ònà méjì*), 20,000 is the multiplicand except where a whole number between 2 and 19 cannot be used as a multiplier. To generate 50,000 as a multiple of 20,000, the multiplier required would be 2.5, and the number generated would be \* *egbàáwàá ònà méjì-àbò* (‘20,000 in two and half places’), a computation not permitted at this level. Therefore, a lower multiplicand (2000) and an appropriate higher multiplier (25) are selected to get *egbàá lóna mēèédógbòn* (two thousand in thirty-less-five places).

Abraham (1958) gives no information on how intervening numbers like 950,000 are generated, but it can be assumed that the rule about not using fractions as multipliers would apply and that would rule out 20,000 which would have to be multiplied by *mējìdínláàádótá-àbò* (47.5). If the next lower multiplicand (2000) is used, the number generated (*egbàá lóna òrìnlénírínwó ó dín márùn-ún*) would be ambiguous, and could be interpreted as  $2000 \times (480 - 5) = 950,000$  or  $(2000 \times 480) - 5 = 959995$ . To remove this ambiguity, a combination of place values is used as shown in Table 5 below.

**Table 5: Computing 950,000**

Yorùbá Number Word	Symbol	Literal Translation	Computation	Comment
<i>egbàáwàá ònà méjì-àbò dínláàádótá*</i>	950,000	ten two-thousands in three-twenties-less-ten-less two-and-half places	$((200 \times 10) \times 10) \times (-2\frac{1}{2} - 10 + (20 \times 3))$	computation not acceptable
<i>egbàá lóna òrìnlénírínwó ó dín márùn-ún ?</i>	950,000 OR 959995	two-thousand in four-hundred plus four twenties-less-five places OR two-thousand in four-hundred plus four-twenties places, less five	$(200 \times 10) \times ((20 \times 4) + 400 - 5)$ OR $(200 \times 10) \times ((20 \times 4) + 400) - 5$	computation ambiguous
<i>egbàáwàá ònà márùndínláàádótá ó lé</i>	950,000	ten two-thousands in three-twenties-less-ten-less five	$((200 \times 10) \times 10) \times (-5 - 10 + (20 \times 3)) + (200$	correct computation;

ẹgbàá lóna mèèédògbòn		places plus two thousand in thirty-less-five places	x10) x (30-5)	nation of place values
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Two multiplicands are utilized in generating 950,000: ẹgbàáwàá (20,000) and ẹgbàá (2000). Appropriate multipliers (generated by multiplication and subtraction) are then used to multiply them, and the two multiples are then added: (20,000 x 45) + (2000 x 25), i.e. 900,000 + 50,000, to generate 950,000.

The use of *òna/lónà* (times) in the higher numerals is another source of complexity in reckoning Yoruba numbers because of the ambiguity introduced. When combined with the phrase for introducing addends (*ó lé*) and subtrahends (*ó dín*), it becomes difficult to determine which particular place value has been added to or subtracted from. *Ẹgbàá lóna mèèédògbòn ó lé mèsàn-án* could conceivably be reckoned as (2000 x 25+9) = 68,0000 or (2000 x 25)+ 9= 50009. Only a highly numerate native speaker of Yoruba would know that *mèèédògbòn ó lé mèsàn-án* (25+9) is not a possible sum that can be used as a multiplier; the correct 'formula' would have to be *mérinlélògbòn* (30+4). Such a speaker would therefore correctly compute *ẹgbàá lóna mèèédògbòn ó lé mèsàn-án* as 50009, i.e. (2000 x 25) + 9.

#### 1.4 Division

It is a matter of debate whether the Yoruba traditionally utilized division in reckoning numbers. The use of some fractions shows that the concept of division was known. *Ìdajì*, literally, a division into two (½) and *ìlàrin*, a slicing into four (¼) are commonly used number words. Of greater interest are number values that have variant renderings, especially in counting cowries. For example, *ẹgbàá lóna mèèédògbòn* (50,000) is the same as *òkẹ méji-àbò*. Table 6 below shows some more examples.

**Table 6: Counting in Cowries**

number of cowries	string (cowries÷40)	head (strings÷50)	sac (heads÷10)
40	1	-	-
2000	50	1	-
20,000	500	10	1
50,000	1250	25	2½

Some of the examples shown above are seen as examples of multiplication rather than division. This scenario may suggest otherwise. Imagine that a farmer brings a very huge pile of yams, and would like to sell them to retailers. He claims there are 200 yams in the heap but the retailer would need to ascertain that claim. What she would need to do is to first of all choose a divisor value, say 5 or 40; make smaller heaps using the divisor chosen and count the number of heaps. If her divisor was 5, she would have 40 groups of five, termed *ìlé*, and if the divisor chosen was 40, she would have 5 groups of 40, termed *owó*. The practice of re-denominating bigger values by changing place values involves division.

Dividing by *owó* is still used in bulk sales today. On a visit to a farm produce market in Owena, Ondo State, Nigeria in 2009, this author participated in the bulk purchase of oranges. These are counted in dozens and dropped into a PET sac. For each dozen put in the bag, the seller put one orange in a small basket. At the end, she then counted the oranges in the basket to calculate how many dozens she had in the PET sac. Here division and multiplication are complementary.

## 2 Some Phonological Processes in Yoruba Number Word Derivation

Another major source of complexity is that the final phonological shape of Yoruba numerals may differ radically from the input units. This means they are subject to some complex phonological processes which produce forms that sound from their constituent bases. This may make them a challenge to interpret. Table 7 below shows some of the processes.

**Table 7: Some Phonological Processes in Yoruba Number Word Derivation**

Number	input	output	processes involved
11	oókan lé èwá	oókànlá	deletion
15	àrún dín ní ógún/ èrún dín ní ogún	èédógún	deletion, assimilation
40	ogún èjì	ogójì	coalescence
50	èwá dín nínú ogóta	àádòṭa	elision
60	ogún èta	ogóṭa/ṭa	coalescence/clipping
100	ogún òrún	ogóòrún/òrún	assimilation, deletion, clipping
300	orún dín nínú irínwó	òdúnrún	assimilation, deletion
700	òrún dín nínú egbèrin	èédégbèrin	assimilation, deletion
2000	igba èwá	egbàá	segment and tone deletion; TR harmony
5000	egbèrún dín nínú egbèwá mètá	èédégbàáta	clipping, assimilation, deletion
20,000	egbàá èwà	egbàáwàá	deletion

Segment deletion is a very important process in generating Yoruba numerals. For example, in generating *èédógún* from *èrún dín ní ogún*, the phrase ‘dín ní’ /dĩ nĩ/ is reduced to /d/ by the loss of three segments. Sometimes, whole syllables are clipped off after assimilation as in *ogún òrún* > *ogóòrún* > *òrún* and *ogún èjì* > *ogóòjì* > *òjì*. *Òdúnrún* is similarly generated from *orún dín ní irínwó*.

In deriving compounds of *ogun*, the operative process is coalescence, defined by Awobuluyi (1987) as a fusion of some characteristics of two linguistic units to produce a third distinct unit of the same general kind. Two contiguous segments at the underlying representation are replaced at the surface phonetic level by a third segment which has some features of those two contiguous segments (Oyebade 2004). Examples of coalescing vowels are /ũ/ + /e/ → /o/ (in *ogún èjì* → *ogóòjì*; *ogún èje* → *ogóòje*) and /ũ/ + /ɛ/ → /ɔ/ (in *ogún èta* → *ogóòta*; *ogún èjo* → *ogóòjo*).

In generating compounds of *igba*, the first step is vowel and tone deletion, and the second, Tongue Root harmony. TR harmony refers to the characteristic in Standard Yorùbá for +ATR mid-vowels (/e, o/) to co-occur only with other +ATR vowels, and for -ATR mid-vowels (/ɛ, ɔ/) to co-occur with other -ATR vowels, including ‘a’.

Owolabi’s (1989: 222-223) formulation on compounding in Yoruba numerals is as follows. When two words combine to form a compound numeral, the second vowel of the first word and its tone are deleted as shown below:

igba	+	èje	→	igb	+	èje
igba	+	èta	→	igb	+	èta
igba	+	èjo	→	igb	+	èjo
igba	+	àrún	→	igb	+	àrún

Then the first vowel of the second numeral is then said to harmonize with the remaining vowel of the first numeral (by assimilation across segments) to produce the following:

igb + èje	→	igb èje	→	<i>egbèje</i>	‘1400’
igb + èta	→	igb èta	→	<i>egbèta</i>	‘600’
igb + èjo	→	igb èjo	→	<i>egbèjo</i>	‘1600’
igb + àrún	→	igb àrún	→	*agbàrún	

This formulation does not explain how *egbèrun* is derived from *igba+àrun*. The problem is resolved if we realise that *igba* has a variant, *egba* which occurs in compound numerals (Awobuluyi 2008: 98). The second vowel of the first word and its tone are deleted, as shown below:

egba + èje	→	egb + èje
egba + èta	→	egb + èta
egba + àrun	→	egb + àrun
egba + èwáá	→	egb + èwá

The process generates the final form *egbèje* in the first example. In the other examples, ATR harmony specifies that the –ATR vowels ‘è’ and ‘á’ should co-occur with another –ATR vowel, ‘è’.

egb + èje	→	<i>egbèje</i>	‘1400’
egb + èta	→	<i>egbèta</i>	→ <i>egbèta</i> ‘600’
egb + àrun	→	<i>egbàrun</i>	→ <i>egbèrún</i> ‘1000’
egba + èwá	→	<i>egbèwá</i>	→ <i>egbèwá</i> ‘2000’

In the last example, the labio-velar approximant /w/ may also be deleted to get ‘*egbèá*’ from which *egbàá* is generated by assimilation.

### 3 The use of non-analytic numbers

Apart from the mathematical and phonological processes which have been identified as sources of complexity, Yoruba attests a few number words that do not fit in neatly in their groups, seeming like insertions. *Ogbòn* for 30 is irregular in a vigesimal system that generates decades as multiples of twenty, and the intermediate numbers as multiples of twenty less ten. Since 50 and 130 are *àádóta* ((20x3) -10) and *àádóje*, ((20 x7) -10) respectively, 30 could have been computed as two twenties less ten or *àádóji* (i.e. *èwá dín nínú ogóji*), 400 as *egbèjì* <igba méjì (200 x2) rather than *irínwó* and 300 as *èédégbèjì*. <òrún dín ní egbèjì ((200 x2) -100). The sudden shifts from analytic to non-analytic numbers would be difficult for learners.

The use of *okòó* ‘score’ as a variant of *ogún* ‘twenty’ as an addend or subtrahend to *igba* (200), *irínwó* (400) and their derivatives presents a similar problem. *Okòó* < okò owó and *irínwó* < irin owo seem to be relics of an earlier vigesimal system where *okòó lónà okòó* (a score in a score places) equals *irínwó*. In other words, traditional Yoruba numeration may be not just one complex system, but a combination of at least two systems.

### 4 Multiplicity of number scales

Perhaps the greatest source of complexity in the Yoruba number system is the multiplicity of number scales. By number scale is meant an ordered series of graduated values of numbers. Yoruba has a denary or decimal number scale: based on 10, and using multiples/ derivatives of 10 e.g. 1-14. It also has a vigesimal number scale, based on 20 and using multiples/ derivatives of 20 (200 =20 x 10; 400 = 20 x 20). Other series are derived by a combination of the two scales: 2000= 20x10x10, and 20,000 = 20 x 10 x 10 x 10.

What this means is that the Yoruba numeral system would not fit into the decimal gradation that has become well known with the Hindu-Arabic system, where every higher place

value is ten times larger than the one below: ‘tens’, ‘hundreds’, ‘thousands’, ‘ten-thousands’, ‘hundred-thousands’, ‘millions’, ‘ten-millions’, ‘hundred-millions’, etc., and arranged so that the higher place value comes before the lower. The format for Yoruba numbers displaying the correct place values would be: ‘units’, ‘tens’, ‘twenties’, ‘two-hundreds’, ‘two-thousands’, and ‘twenty-thousands’. In addition, for each place value, it would be necessary to specify whether the value of a number is negative or positive. For example, the value of 13 is one ‘tens’ and three ‘positive units’, 15 is one ‘twenties’ and five ‘negative units’, 290 is one ‘two-hundreds’, four ‘twenties’ and one ‘tens’. Table 8 presents a format that displays the complexity arising from the multiplicity of place values.

Though ‘hundred’ and ‘thousand’ are not discrete place values in the Yoruba counting system, they have been included on the table as place values with a negative value, because each only occurs as a ‘subtrahend bundle’ (*èédé*) in numbers reckoned by subtraction. They are never minuends nor do they participate in addition or multiplication. *Ogún* (20), *igba* (200) and *irínwó* (400) always have a plus value, as do the derived bundles *egbàá* (2000) and *egbàáwàá* (20,000), and with the exception of *irínwó*, can be multiplied. However, all of them can be added to or subtracted from. In addition, *Okòó* ‘score’, a variant of twenty may have a negative or positive value, but as earlier stated, occurs only in combination with *igba*, *irínwó* and their derivatives.

**Table 8: Complexity of Place Value in Yoruba Number System**

symbol	Yoruba Number Word	20000	2000	1000	400	200	100	20	10	1-9
		+	+	-	+	+	-	+	+	+
4	ẹẹrin									4
13	ẹẹtálá							1		3
15	ẹẹdógun						1	0		5
20	ogún						1	0		0
40	ogójì						2	0		0
46	ẹẹrindínláàádóta						3		1	4
50	àádòṭa						3		1	0
90	àádòṛùn-ún						5		1	0
100	ogòrùn-ún						5	0		0
140	ogóòje						7	0		0
183	ẹẹtálélógòòsàn-án						9	0		3
198	igba ó dín méjì					1	0	0		2
200	igba					1	0	0		0
213	igba ó lé mètáláá					1	0	1		3
219	okòó léerúgba ó dín kan					1	1	0		1
223	okòó léerúgba ó lé mēta					1	1	0		3
290	òrinlúgba ó lé mēwàá					1	4	1		0
300	òdúnrún				1	0	1	0		0
301	òdúnrún ó lé kan				1	0	1	0		1
390	okòó dín nírínwó ó lé mēwàá				1	0		1	1	0
400	irínwó				1	0		0		0



450	òjì lé nírínwó ó lé mēwàá				1	0		2		1		0	
480	òrìn lé nírínwó				1	0		4		0		0	
500	èédégbèta					3	1	0		0		0	
620	okòó lé légbèta					3		1		0		0	
1000	egbèrùn					5		0		0		0	
2000	egbàá		1			0		0		0		0	
3100	egbèédógún ó lé ogòrùn-ún					15		0		5		0	
3901	egbòkàndínlógún ó lé ogòrùn-ún ó lé kan					19		0		5		1	
4000	egbàájì		2			0		0		0		0	
5678	èédégbàáta ó lé egbèta ó lé èjìdínlógòrìn		3	1	3			4					2
10000	egbàárùn-ún		5		0	0							
12000	egbàáfà		6										
20000	egbàáwàá	1	0			0		0		0		0	
34000	egbàá lònà mètádínlógún		17										
40000	egbàáwàájì	2											
50009	egbàá lònà mèèédògbòn ó lé mèsàn-án		25										9
60000	egbàáwàá lònà mēta	3											
70000	egbàá lònà mārùndínlógójì		35										
1,000,0	egbàáwàá ònà àádòta	50											

More complexities would arise if the numbers analyzed above were to be used in Arithmetic. A simple sum of five thousand, six hundred and seventy-eight plus three thousand, nine hundred and three (in Sum A) is computed as *èédégbàáta ó lé egbèta ó lé èjìdínlógòrìn* plus *egbòkàndínlógún ó lé ogòrùn-ún ó lé mēta* in Yoruba (Sum B with the following place value abbreviations used: U (units), T (tens) Tw (twenties), H (hundreds), TwH (two hundreds), Th (thousands) and TwTh (twenty thousands)). Just as in the Hindu-Arabic system where ten ‘tens’ are converted into ‘hundred’ and ten ‘hundreds’ into ‘thousands’ etc., some place value conversions are necessary when Yoruba are used: ten ‘ogún (20)’ to ‘igba (200)’, and ten ‘igba (200)’ to ‘egbàá (2000)’. Moreover, place values that did not feature in the numbers to be added had to be inserted, for example, the subtrahend *èéd-* ‘less a hundred’ which was generated in the process of converting *ogún* to *igba*.

**Sum A: (Hindu-Arabic Numeration Style)**

		Th	H	T	U
		5	6	7	8
	+	3	9	0	3
step 1	=	8	15	7	11
step 2	re-compute place value (units as tens)	8	15	7+1	1
step 3	re-compute place value (hundreds as thousands)	8+1	5	8	1
step 4	<b>Finish</b>	<b>9</b>	<b>5</b>	<b>8</b>	<b>1</b>

**Sum B: (Yoruba Numeration Style)**

		TwTh (+) <i>ẹgbàá</i>	Th (-) <i>ẹ̀éd-</i>	TwH (+)	H (-)	Tw (+) <i>ogún</i>	T (+/-) <i>íd-</i>	U (+/-)
		3	-1	3		4	0	-2
	+			19		5	0	+3
step 1	=	3	-1	22		9	0	+1
step 2	re-compute <b>ogún</b> (20) → (200)	3	-1	22 +1		4	0	+1
step 3	re-compute <b>igba</b> (200) less <i>éd-</i> )	3	-1	23	-1	4	0	+1
step 4	re-compute <b>igba</b> (200 to (20,000)	3+2	-1	3	-1	4	0	+1
step 5	<b>finish</b>	<b>5</b>	<b>-1</b>	<b>3</b>	<b>-1</b>	<b>4</b>	<b>0</b>	<b>+1</b>

The operations at the level of tens and units are clear and will not be discussed further. The higher place value conversions may need some elucidation. The place value abbreviations used in Sum B are as follows: U (units), T (tens) Tw (twenties), H (hundreds), TwH (two hundreds), Th (thousands) and TwTh (twenty thousands).

In converting '9 twenties' to 'two-hundreds', an intermediate place value has to be included, since '9x20' is less than 200. Only '5 twenties' out of 9 move to the 'two-hundreds' position (indicated by '22+1' in step 2), and to indicate that the value is actually less than two hundred, *ẹ̀éd-* 'less a hundred' is inserted (step 3). In re-computing **igba** to **ẹgbàá**, '20 two-hundreds' are moved to the 'twenty-thousands' position. No intermediate negative place value is needed. Needless to say, the answer of Sum B: 5,-1, 3,-1, 401 (*ẹ̀édẹgbàárùn-ún ó lé ẹ̀édẹgbèta ó lé ọ̀kànlélọ̀gọ̀rin*) is equal to the answer in Sum A: 9,581 (nine thousand, five hundred and eighty-one). However, the process of doing the simple addition using Yoruba numerals is much more complicated than using Hindu-Arabic numbers than sums.

## 5 Summary and Conclusion

This paper has attempted to show some of the complexities of the Yoruba counting system. As has been discussed, these complexities derive from the mathematical operations and phonological processes involved in compounding of higher numbers from the cardinal forms as well as the multiplicity of place values, especially those specified as having a negative value, i.e., *àád-* 'less 10', *ẹ̀éd-* 'less a hundred and *ẹ̀éd-* 'less a thousand'. The focus of our discussion

is on how Yoruba numbers are reckoned and named. Sums A and B were only presented as a sample of how the Yoruba numerals would be used in very basic Arithmetic; and how they differ from the figures and conversions currently used in primary school Mathematics. That, as has been demonstrated in the section above, would present challenges that would be almost insurmountable to school age children.

It is therefore a matter of urgency for a forum for standardizing the different proposals for simplifying the Yoruba numeral system to be convened. This need was reiterated at the Linguistic Association of Nigeria workshop on 'Numeral Systems of Nigerian Languages', which was held at the University of Port Harcourt, Nigeria on the first of December, 2010. Speaking at the Workshop, Professor Nolue Emenanjo wondered why the decimalization of the Yoruba number system has lagged so far behind that of Igbo, considering that the decimalization proposals for both were mooted in the 1970s.

Nevertheless, traditional Yoruba numeration should be preserved and taught as part of university courses in Mathematics. The 'fascinating chapter in the history of mathematics and the development of human thought' should not be forgotten.

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## Appendix

**Table 2: Some Yoruba Numbers Generated through the Process of Addition**

Symbol	Yoruba Number Word	Literal Translation	Computation
11	oókànláá	one plus ten	1+10
12	eéjílá	two plus ten	2+10
13	eětálá	three plus ten	3+10
23	eětálélógún	three plus twenty	3+20
34	eèrinlélògbòn	four plus thirty	4+30
183	eětálélògòsàn-án	three plus nine-twenties	3 +(20 x9)
187	ogòsàn-án ó lé méje	nine-twenties plus seven	(20 x 9) +7
213	igba ó lé métáláá	two-hundred plus three-plus-ten	200+(3+10)
223	okòó léérúgba ó lé mēta	one score plus two-hundred plus three	(20 +200) +3
290	òrinlúgba ó lé mēwáá	four-twenties plus than two-hundred plus ten	((20 x 3)+ 200) +
450	òjì lé nírinwó ó lé mēwáá	two-twenties plus four-hundred plus ten	(20 x 2) + 400 + 10
620	okòó lé légbeta	a score plus three two-hundreds	20 + (200 x 3)
3100	eḡbèédógún ó lé ogòòrùn-ún	fifteen two-hundreds plus one hundred	200 x(20-5) + (20
3901	eḡbòkàndínlógún ó lé ogòòrùn-ún ó lé kan	nineteen two-hundreds plus one hundred plus one	200 x (-1 +20) + (20 x5) +1
5678	eédégbàáta ó lé eḡbeta ó lé èjìdínlògorin	one thousand removed from three two-thousands plus three two-hundreds plus two removed from four-twenties	-(200 x5) + ((200 x 10) x3) + (200 x 3) + (-2 + (20 x 4)
50009	eḡbáá lóna mēèédògbòn ó lé mēsàn-án	two thousand in thirty-less-five places, plus nine	(200 x10) x (30-5) +9

**Table 3: Some Yoruba Numbers Generated through the Process of Subtraction**

Symbol	Yorùbá Number Word	Literal Translation	Computation
15	eédógún	twenty less five	-5 + 20
16	eèrindínlógún	twenty less six	-4 + 20
27	eètádínlògbòn	thirty less three	-3 +30
46	eèrindínlááádòta	three-twenties-less-ten, less four	- 4 -10 +(20 x 3)
50	àádòta	three-twenties-less-ten	-10+ (20 x 3)
75	aárùndínlògorin	four-twenties-less-five	-5 + (20 x 4)
90	àádòrùn-ún	five-twenties-less-ten	-10 + (20 x 5)
148	eéjìdínlááádòjò	eight-twenties-less-ten, less two	-2 -10 +(20 x 8)
170	àádòsàn-án	nine-twenties-less-ten	-10 + (20 x 9)
179	oókàndínlògòsàn-án	nine-twenties less one	-1 + (200 x 9)
198	igba ó dín méji	two-hundred less two	200 -2
219	okòó léérúgba ó dín kan	one score plus two-hundred minus one	(20 + 200) – 1
300	òódúnrùn	four-hundred less five-twenties	-(20 x 5) + 400
335	òtádín-nírinwó ó dín	four-hundred less three-twenties, less	(-(20 x 3) + 400) -5

	máàárùn-ún	five	
390	okòó dín nírínwó ó lé mēwàá	four-hundred less one score, plus ten	$(-20 + 400) + 10$
500	èédégbèta	a hundred removed from three two-hundreds	$-100 + (200 \times 3)$
700	èédégbèrin	a hundred removed from four two-hundreds	$-100 + (200 \times 4)$
5000	èédégbàáta	one thousand removed from three two-thousands	$-(200 \times 5) + ((200 \times 10) \times 3)$

**Table 4: Some Yoruba numbers generated through the process of multiplication**

Symbol	Yorùbá Number Word	Literal Translation	Computation
20	ogún	twenty	20
40	ogójì	two twenties	$20 \times 2$
60	ogóta	three twenties	$20 \times 3$
100	ogórùn-ún	five twenties	$20 \times 5$
140	ogòòje	seven twenties	$20 \times 7$
200	igba	two-hundred	200
600	egbèta	three two-hundreds	$200 \times 3$
1000	egbèrún	five two-hundreds	$200 \times 5$
1600	egbèjọ	eight two-hundreds	$200 \times 8$
2000	egbèwá / egbàá	ten two-hundreds = two-thousand	$200 \times 10$
3000	egbèédógún	fifteen two-hundreds	$200 \times (20-5)$
3800	egbòkàndínlógún	nineteen two-hundreds	$200 \times (-1 + 20)$
6000	egbàáta	three two-thousands	$(200 \times 10) \times 3$
10,000	egbàárùn-ún	five two-thousands	$(200 \times 10) \times 5$
12,000	egbàáfà	six two-thousands	$(200 \times 10) \times 6$
20,000	egbàáwàá	ten two-thousands = ten two-thousands	$(200 \times 10) \times 10$
30,000	egbàá lóna mēédógún	two-thousand in twenty-less-five places	$(200 \times 10) \times (20-5)$
34,000	egbàá lóna mētàdínlógún	two thousand in twenty-less-three places	$(200 \times 10) \times (20-3)$
40,000	egbàáwàá ònà méjì	ten two-thousands in two places	$((200 \times 10) \times 10) \times 2$
50,000	egbàá lóna mēèédógbòn	two thousand in thirty-less-five places	$(200 \times 10) \times (30-5)$
60,000	egbàáwàá ònà mēta	ten two-thousands in three places	$(200 \times 10) \times 10) \times 3$
90,000	egbàá lóna mārùndínlógóta	two-thousand in three-twenties-less-five places	$(200 \times 10) \times (-5 + (20 \times 3))$
100,000	egbàáwàá ònà mārùn-ún	ten two-thousands in five places	$(200 \times 10) \times 10) \times 5$
900,000	egbàáwàá ònà mārùndínlāàádóta	ten two-thousands in three-twenties-less-ten-less five places	$((200 \times 10) \times 10) \times (-10 + (20 \times 3))$
1,000,000	egbàáwàá ònà àádòta	ten two-thousands in three-twenties-less-ten places	$(200 \times 10 \times 10) \times (-10 + (20 \times 3))$

# Unexplained abortions of immunological origin

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## Summary

The miscarriages with repetition pose a problem of assumption of responsibility because they remain unexplained at certain couples in age of procreation. Infertility is the incapacity at a couple to design a child after two years of regular sexual relationships without contraception or to carry out a pregnancy in the long term. Because of its complexity and difficulty of preventing it, to diagnose it and treat it, infertility constitutes a world problem of public health. This study is interested in women having made abortions with repetition of origin supposed immunological, which supposes that a morphological and functional complete assessment will have beforehand eliminated any other possible cause from miscarriages with repetition. CROSS's -MATCH are carried out at 48 couples having an age different from a couple to the other and the same couple. It seems that the age, not only by the woman but also by the man increases the risk of the abortions. This last also persists when the mother develops paternal antibodies anti HLA.

**Index Terms:** infertility, miscarriages with repetition, age, CROSS-MATCH, HLA.

## **1-Introduction**

Infertility is a complex subject. It has multiple causes and effects which vary according to the sexual age, sex, lifestyle, antecedents, social environment and the cultural environment. It is not that the business of a spouse or other, it is a problem of the couple. The exploration of an infertile couple must thus be carried out in parallel at the 2 partners and one should not wait to have concluded with normality from exploration from the woman to ask a spermogramme to the husband.

Infertility is defined by OMS like the incapacity of a couple in the long term to procreate or carry out a pregnancy at the end of a year or more not protected sexual intercourse regular.

The abortions with repetition occurring apart from the gynecological or hormonal causes can be observed among women not having ever had pregnancy led beyond three months or even among women having already had a normal pregnancy.

These two forms of abortions to repetition seem well to illustrate the importance owing to the fact that, for a normal gestation, a beneficial immune reaction (of tolerance activates) must exist and prevail on a harmful immune reaction (of rejection).

Many factors probably intervene to explain the immunological tolerance existing during the pregnancy, which makes that there does not exist rejection of the fetus.

Among the factors which were identified during in vitro studies and in the animal: the anatomical position of the fetus, the absence of expression on the level of the trophoblaste of the molecules of the system of histocompatibility HLA classifies I and II, the presence of blocking antibodies, a modification of the immunizing response, the production on the level of the fetus and placenta of hormones and immunosuppressive substances [1].

## **2 - Immunology of the pregnancy**

The embryo present at the surface of its cells of proteins HLA different from those of his/her mother, since half of its genes are brought to him by the paternal pronuclear. For the immune system of the mother, it thus constitutes "not self" and should be eliminated if there did not exist protection mechanisms.

The fabrics fetal and more particularly those of the placenta constituting the direct interface between the mother and the child, namely the syncytiotrophoblaste and the cytotrophoblaste of velocities do not express antigens of histocompatibility.

After the establishment, the extravilleux cytotrophoblaste present of the antigens of histocompatibility monomorphes of the type HLA G. antigen HLA G would exert at the same time an antiviral function, an immunosuppressive function and functions of the no immunological type. He plays a crucial role in the tolerance of the "semi-allogénique Clerc's Office" which the fetus [2] represents.

Considering the importance of system HLA, in several fields consequently the unexplained abortions, this system was the title many studies.



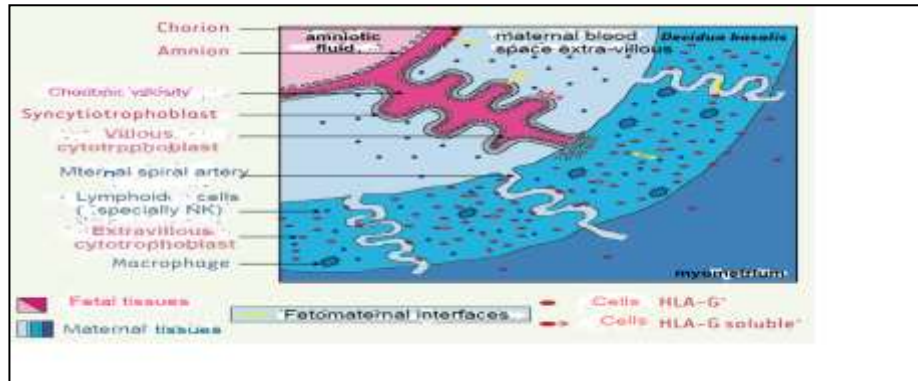


Fig.1: Principal interfaces fetus-nursery schools during the pregnancy [3].

### 3 Others molecules intervening in the tolerance fetus-nursery school

#### 3.1 Cells NK

Cells NK represent more than 70% of the lymphocytes of the uterine mucous membrane are particularly numerous three to five days after ovulation. They are located in contact with the cells decidable and disappear before the following menstruations. If there is fecundation, they persist during the first quarter then their number decreases and are almost absent at the end of the pregnancy.

These cells are part of the cells of innate immunity and they are able to destroy the cells which do not express molecules HLA A, B or C but the cells carrying HLA G is protected from the cytolysis because of the connection which is carried out between these molecules and the receivers KIR present at the surface of cells NK [4]. However, even if spontaneously, they have a weak cytolysis' activity and do not destroy the cells of the trophoblaste [5].

#### 3.2 Role of the cytokines: balance Th1/Th2

The T-cells of the organization can be distinguished according to the cytokines that they produce; in lymphocytes Th1 and Th2. Th1 produce pro-inflammatory cytokines: IL-2, IFN $\gamma$  and TNF $\alpha$  in particular causing an activation of the macrophages and cellular immunizing responses which are implied in the phenomena of rejection of the allergenic Clerc's Offices. On the other hand, the Th2 lymphocytes synthesize cytokines anti-inflammatory drugs: IL-4, IL-5, IL-6 supporting an answer humeral; IL-10 and TGF $\beta$  are immunosuppressive cytokines implied in the phenomena of regulation of the immunizing response and the tolerance [6].

During gestation, a Th2 prevalence characterized by an increased production of the cytokines Th2 and an inhibition of the production of cytokines Th1, experiments confirmed that the administration of cytokines Th1 in the mouse gestate causes abortions [7].

#### 3.3 Role of the regulating T-cells

Regulating T-cells (Treg) (CD4<sup>+</sup> CD25<sup>++</sup>) act on the phenomena of tolerance by limiting the answers antigen – specific.

The fetus is tolerated immunologiquement by the mother thanks to important modifications of balance in particular by the presence of these Treg lymphocytes. The latter would prevent the abortion by creating microenvironnement a tolerogene characterized by high rates of TGF $\beta$  (transforming growth Factor  $\beta$ ) and LIF (leukemia inhibitory Factor). LIF and its receiver are also implied in the establishment of the blastocyste [8].

#### **4 Equipment and methods**

Our study (retrospective and prospective) is carried out on the level of the laboratory HLA - C.H.U- Constantine, on 48 couples at which CROSS-MATCH are carried out whose principle is that of the lymphocytotoxicity. The collection of the data, established by a questionnaire, enabled us to record all the necessary information with our investigation starting from the couple itself.

It understands:

- The age of the woman;
- The age of the man;
- Many years of marriage;
- Many children;
- Many abortions and consanguinity.

##### **4.1 The CROSS-MATCH**

The cross-country race-match allows the fast detection of circulating preexistent cytotoxic antibodies, by a technique of dependent lymphocytotoxicity complement (technique of reference). It is a test of compatibility between the serum of the woman and the cells of the spouse; she is obtained as follows:

- Insulation of the cells mononucleosis starting from the total blood of the man by Fecal;
- Deposit of the cells mononuclear in plates of oiled TERASAKI;
- Injection of the maternal serum;
- Then the classical lymphocytotoxicity (addition of the complement and the vital dye) and even the reading will be same principle (lyses of the cells).

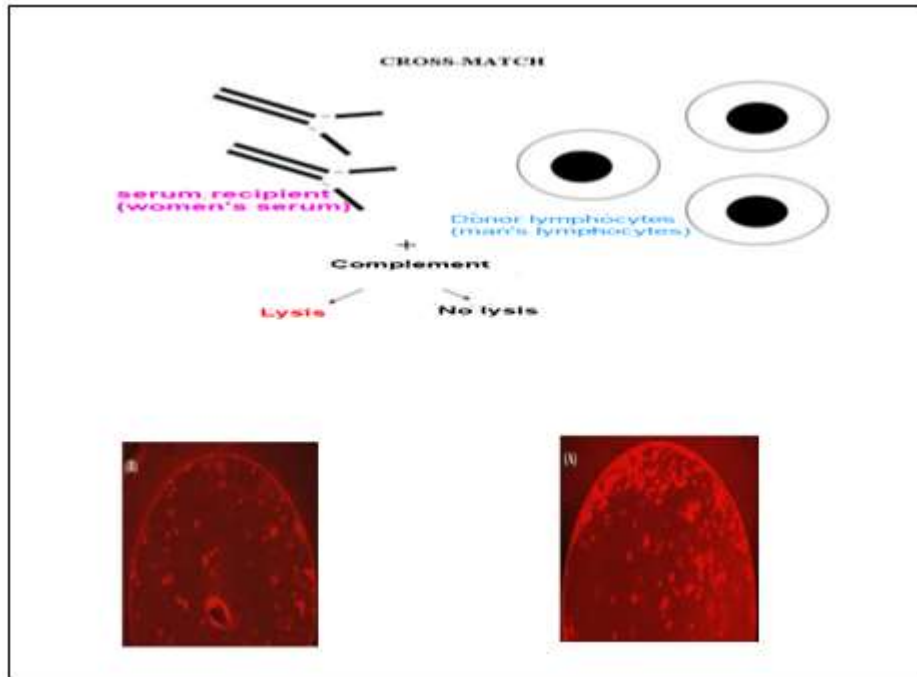


Fig.2: Principle of the CROSS-MATCH and sight under microscope.

## 5 Results

### 5.1 Old of the women

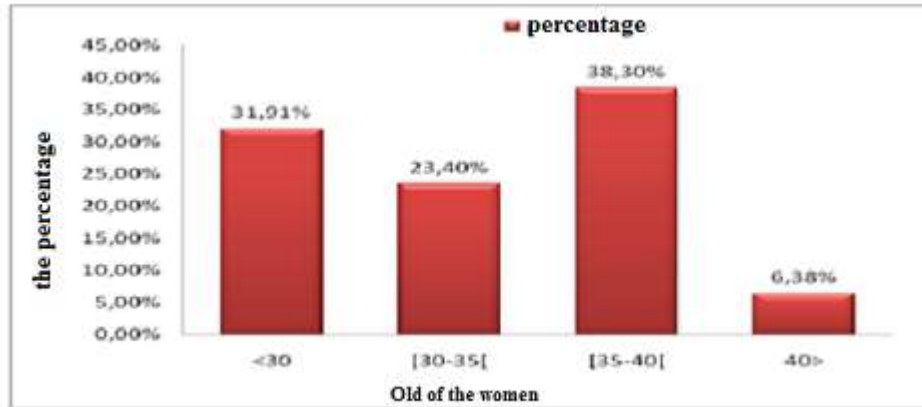


Fig.3: Histogram representing the percentage of women having a problem of abortion according to the age bracket.

This histogram indicates the patients having had 2 to 5 of the unexplained abortions; the distribution of the age groups of amplitude 5, shows the minimum age is 30 years and higher than 40 years for the maximum age. Our results reflect that the slices ranging between 35 and 40 years (with an average of 32.41) are the women who worry much more their infertility.

## 5.2 Old of the men

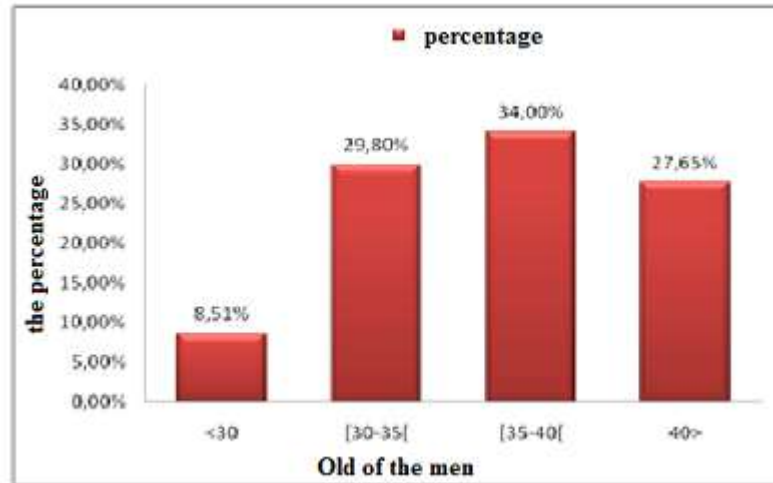


Fig.4: Histogram of the percentage of men consulting for a problem of fertility according to the age bracket.

The spouse is forgotten a little, that is an error since the male fertility is more and more often put in question.

Figure 4, distribution of the age brackets of the men of amplitude 5, indicates to us that the age groups ranging between 35 and 40 years (with an average of 34) are those which consult for a problem of design.

This prevented us not from saying that infertility affects the two sexes in the same way

## 5.3 Type of abortions

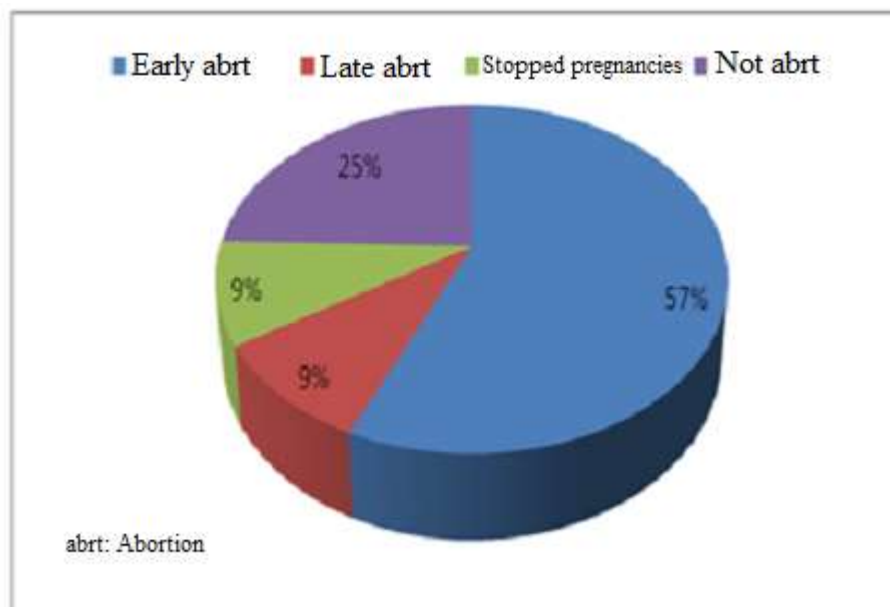


Fig.5: Sector of distribution of the percentage of the abortions according to the type.

The data collection was made following questionnaires. If we analyze the got results, it arises that on 48 women, 25% did not make abortions, 9% had stopped pregnancies, 9% of late abortions and 57% of early abortions (Fig.5).

The CROSS-MATCH carried out on the 48 couples, indicates 9 patients to us present a positive CROSS-MATCH and 38 reveal negativity.

On the 9 positive CROSS-MATCHES, 7 patients belong to the 57% i.e. the section representing of the early abortions idiopathic.

The 2 negative CROSS-MATCHES are located:

- One in the portion of the late abortions.
- One in the portion of the stopped pregnancies.

#### 5.4 Relation between the number of abortion and the CROSS-MATCH

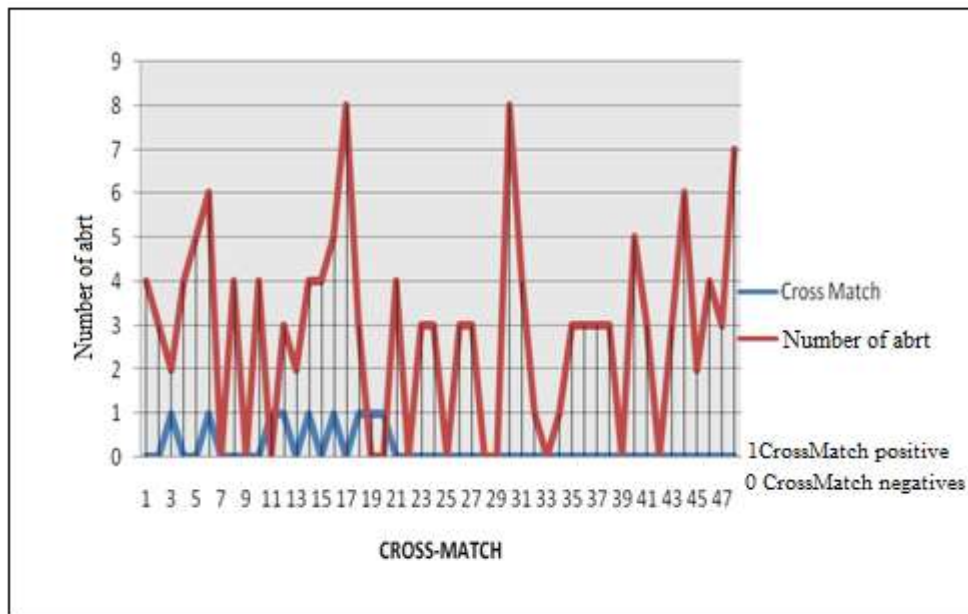


Fig.6: Correlation enters the number of abortions and the results of the CROSS-MATCH.

The examination of the individual curves enabled us to establish the relation between the number of abortion and the result of the CROSS-MATCH (Fig.6). On the whole of the patients (48couples), one notes 9 positive CROSS-MATCH what means that these 9 mothers develop paternal antibodies anti HLA.

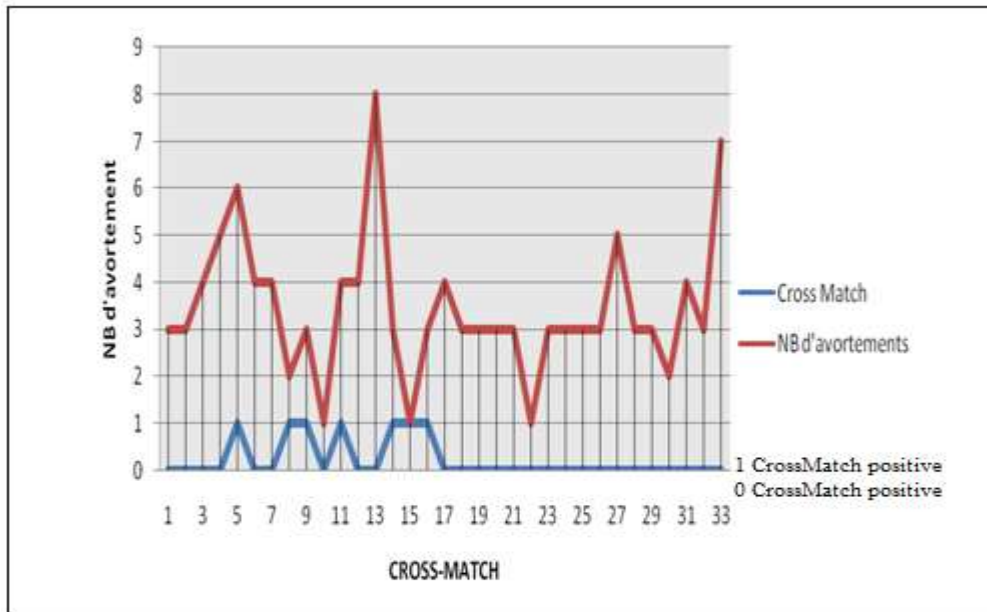


Fig.7: Correlation enters the number of early abortions and the results of the CROSS-MATCH.

Figure 7, indicates 33 women to us had unexplained early abortions with repetition, whose 7 CROSS-MATCH are positive (22%) and 26 negative CROSS-MATCH (78%).

In addition, in the tables of the data there are 10 consanguineous couples and present a negative CROSS-MATCH, therefore consanguinity does not influence the abortions in our sampling.

## 6. Discussion

The results of this study are in agreement with recent publications. When the pregnancy is long in coming, the women thus consult at a more advanced age, more especially as they are reassured by information on the technical progress made in the field of medical help to procreation [9]. Indeed, in natural cycle, one observes a physiological reduction in the female fertility with the years. This fall is related on the reduction in the chances of design, the increase in the rate of spontaneous miscarriages and to the increase in the risk of obstetric complications.

When the biological age of the woman increases, one observes a reduction in the quality of the uterine endometrium in which the embryo grows, it can also result from an insufficiency of secretion of progesterone in phase luteale and the oocytes are more likely to present chromosomal anomalies in their fertilized core, with the result that there are more non-viable embryos (abortion).

Ali SM., et al. (1994), suggest that the progression of the female age increases the risk of miscarriages and chromosomal aberrations: 33% of the pregnancies started at 40 years are completed by a miscarriage; the rate of chromosomal anomalies (trisomies, anomalies of structure and the sexual chromosomes) quadruple between 30 and 40 years, then double every 2 years [10]. It is also necessary to sensitize the couples on the impact from now on recognized age of the man on the chances of design. Thus, if 78% of the men do not conceive in the 6 months when they are old of less than 25 years, they are not any more but 58,4% to do it beyond 35 years.

The projection of age at the man is accompanied by a fall amongst spermatozooids as well as deterioration of their morphology and their mobility, which involves a progressive reduction in the fertility. This quality of the gametes is low, also, when the man is very young; it passes by a maximum around about thirty [11].

The work presented to European Society of Human Reproduction and Embryology in 2008, bearing on more than 21239 cycles of intra-uterine inseminations (with sperm of the spouse) confirms the effects of the age of the two partners on the exit of insemination.

The rate of miscarriages increases with the years by the woman (11,3% before 30 years, 48,2% after 42 years) but also with that of the man (13,9% before 30 years, 34,7% after 45 years) [12].

Our investigation did not take into account that patients, having had abortions with repetition of origin supposed immunological, whose morphological and functional complete assessment of the couple will have beforehand eliminated any other possible cause from miscarriages with repetition.

The request of the search for immunization HLA in the pregnant woman in a couple is proposed after on average three to four miscarriages with repetition.

The data obtained, on the 48 CROSS-MATCH carried out, at couples confirm 9 positive. One can suggest that the blocking antibodies bring back the tolerance of the allograft; this can be due to the presence of paternal anti-HLA antibodies inducing the reduction amongst lymphocytes NK and Th (Killers and Helpers) and of rise amongst lymphocytes suppressors.

Moreover, it is noted that the early miscarriages (57%) occurring during the first 3 months are definitely more frequent than those, known as late (9%), of the second quarters (after the 14th week).

Among the studied population, early miscarriages, the tests reveal 7 positive CROSS-MATCH among the 9, therefore when the woman develops paternal anti-HLA antibodies the embryonic rejection is immediate.

## **7. Conclusion**

The chances of design decrease with the years not only with that of the mother but also with that of the father and it constitute an important risk factor with regard to the miscarriages with repetition.

One note to also them miscarriages with repetition when the mother develops antibodies directed against paternal HLA (CROSS-MATCH) and that will lead to a defeat of the progression of the embryonic development.

It is thus advisable precociously to inform the patients of the effects of the age on the fertility.

Two fundamental messages are to be transmitted:

– to incite the women, and more largely the couples, to conceive before the 35 years age, and even before the 30 years age, especially if they wish to widen the phratry;

– to insist near the health professionals so that they are the vectors of this information to the couple and that they begin various explorations (female hormonal assessment, scans pelvic, hystero-salpingography, analyzes spermatic and test post-coital) at the end of one year.

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# Awareness of Solid Waste Management: Reduction Re-Use and Recycling Among Some Communities of Jos Metropolis of Plateau State, Nigeria.

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## **Abstract**

The importance of maintaining a cleaner environment cannot be overemphasized. As such, the study was focused on the awareness of solid waste management – Reduction, Reuse and Recycling among some communities of Jos metropolis of Plateau State Nigeria. Twenty (20) Communities were selected from Jos South and Jos North LGA which made up Jos Metropolitan. The communities were selected based on the different activities going on such market, business centres, administrative offices in such areas. The study raised two research questions which were answered in the course of the study and one hypothesis formulated that ‘there is no significant relation between awareness on waste management and the quantity of waste disposal’. A structured questionnaire was developed and distributed to the selected communities to respond. For each community, 10 questionnaire were randomly given to the people at home, market, offices and business centres. The result of the study revealed that majority of the communities were unaware of waste reduction, reuse and recycling as many communities discarded items of reusable and recyclable value. Monthly environmental Sanitation was recommended to be observed by all the settlements of Jos. In addition, government should incentivize programme by giving a token to persons who gathered reusable and recyclable items to motivate the people on the need to imbibe waste management for clean and health environment free of pollution.

## Introduction

Wastes are seen as discarded items already used or items that are no longer valuable to the user. Mukherjee (2002) defines solid waste as consisting of discarded of household items, dead animals, industrial and agricultural waste, and other large waste from construction sites, automobiles, furniture etc. Mukherjee further classifies solid wastes into:

- i. Garbage – decomposable e.g. market refuse.
- ii. Rubbish – non decomposable and combustible wastes.
- iii. Ash – fly ash from thermal plants.
- iv. Hospital waste – needles, plasters, and syringes
- v. Large waste – automobiles.
- vi. Sludge.
- vii. Industrial solid waste.
- viii. Mining waste.
- ix. Agricultural waste.

In a similar opinion, Rao (2005) describes solid waste as that material which arises from various human activities which are usually thrown as useless or unwanted. As these unwanted items are being disposed, there is need to be cautious because they can pose serious threat to the environment. These wastes are seen as the most visible kind of pollution and their disposal need to be handled efficiently. Most solid waste accumulation are seen to breed diseases, vectors, flies and rats while the refuse dumps also serve as food for rats and small rodents which can easily proliferate and spread to the neighbouring areas. While a prolonged exposure to hazardous wastes (industrial wastes) can pose danger to human health, uncontrolled burning of open wastes can also destroy valuable soil nutrients and consequently lead to air pollution. In addition, non combustible waste may be washed down to nearby streams or river to cause water pollution. As a matter of urgency there is need for solid waste management to secure the environment from degradation. Santra (2005) cannot be blamed for relating the rate of solid waste generated by most developing countries as a result of population growth, increasing urbanization and industrialization, and the rising standard of living of the people. In other words, the quantity of refuse increases as people's earnings also rises. It can be observed that, uncontrolled dumping of urban wastes destroys the beauty of a city. It has recently been discovered that waste items like empty cans, bottles can be used to perpetrate evil such as making Improvised Explosion Devices (IED) in them. In addition uncontrolled waste disposal can cause natural disaster such as flood when the waste are carelessly thrown to block water ways or drainages.

Jos which is located within the middle belt of Nigeria, a major city known for tin and columbite mining, a city that accommodate all races due to its conducive climate which support all kinds of vegetables, crops and fruits. This city that is also known as Home of Peace and Tourism to all people within and outside Nigeria, is faced with the challenges of curbing solid waste disposal and management. It is obvious that when one travels through the city of Jos, one notices heaps of prolonged accumulated wastes from offices, households, market and business centres on the major streets. The unwanted odour from the dumped wastes and the numerous flies are disgusting. All that comes to mind is, the government must have exhausted all her resources and does not know what to do again because despite all efforts to evacuate the heaps of accumulated wastes weekly through the State Environmental Protection Agency (SEPA) the streets are still littered with all sorts of urban wastes. The city of tourism is now den of accumulated wastes resulting to bad odour and flies. Another question that comes to

mind is, are the people of this beautiful city aware that some items discarded as waste can be reused and/or recycled? It is lamenting however to note that, the people are busy pursuing their daily chores and seem not to be bothered of the danger or serious threats these accumulated solid wastes pose to human and animal health. It could be recalled back that some few months ago, some of the settlements were affected by cholera which led to the death of many people as reported in the media. It is important to also note that when the people imbibe the habit of waste reduction, reuse and recycling, they will stay health. The '3rs' which are environmental friendly can be interpreted and do magic to these communities through the application of the following tips:

**Waste reduction:** reduce unnecessary purchases of items which can lead to too much waste accumulation. This method when adopted saves natural resource, energy and waste disposal space which also reduces toxic substances and the risk of polluted environment which may be harmful to man. Waste reduction can be practiced when people observe the following:

- i. drink tap water or well water instead of bottle or leather water
- ii. avoid, buying disposable goods
- iii. purchase items in bulk instead by bit
- iv. donate unwanted items to the needy
- v. share newspaper with others
- vi. make two sided photocopies
- vii. maintain central file instead of several files
- viii. regulation – make a policy that will regulate the disposal of waste. For example, pay-as-you throw.

**Waste reuse -** This method of managing waste is successfully carried out by reusing some of the discarded wastes such as plastic bottles can be reused to put other liquids inside. Others are:

- i. compost vegetable leaves, papers and others to generate income
- ii. purchase products that are reusable
- iii. polythene can be collected and make fire at home
- iv. repair used items before replacing them

**Waste recycle –** This method recovers useful materials from the trash and reproduce new products, reducing the amount of new raw materials that would have been needed for production. It does not cost one any money to protect the environment, it rather saves money. Items like glass, plastics, metals, ceramics can be recycled. This can be observed through:

- i. purchasing beverages in returnable container
- ii. buying recyclable materials for the office use
- iii. using recycled paper for letter head and newsletter
- iv checking collection (recycled) centres to see items to be accepted and begin to collect them.

When the '3Rs' are properly observed, the environment would be cleared at no cost while the beauty of the state radiate with a promising future of a healthy environment and healthy people.

The problem that necessitated this research was the quantity of solid waste that litters some major streets and settlements of Jos city. The question is whether the good people of Jos

are aware of 'waste Reduction, Reuse and Recycling? Most of the communities seem to be unaware of the danger or risk posed by the accumulated waste to the environment and human health as well. In the light of the above, the purpose of the study was to find out the awareness of solid wastes management – Reduction, Reuse and Recycling among some communities of Jos Metropolis of Plateau State. The study intends to achieve the following objectives.

1. To find out the extent to which disposed solid waste posed danger to the environment.
2. To find out the extent to which waste management-reduction, reuse and recycling can create a healthy and clean environment.

Two research questions were raised in the course of the study as:

1. To what extent does disposed solid waste pose danger to the environment?
2. To what extent does solid waste management reduce, reuse and recycle can create a cleaner environment?

One hypothesis was formulated that, "there is no significant relationship between the awareness of waste management and waste disposals.

### **Methodology**

The survey research design was adopted for the study. The population of the study was all communities within Jos South and Jos North Local Government Areas of Plateau State. Twenty (20) communities used for the study were randomly selected for the purpose of data collection. The instruments of data collection was a structured questionnaire. The respondents were required to indicate their responses on a 4-point likert scale: Strongly Agreed (SA), Agreed (A), Disagreed (D), and Strongly Disagreed (SD). In addition to the questionnaire, oral interview was equally used. Where the respondents could not respond in English, the local dialect (Hausa) was used to interpret the items of the questionnaire to the respondent by the researcher. The questionnaire was administered to some offices, traders, business centres and residential places. The items of the questionnaire were scrutinized by one Senior Lecturer in the Department of Geography and one in the Department of Microbiology in the University of Jos for the purpose of content validity. Percentages were used to answer the research questions where 'SA' and 'A' were categorized as 'Yes' while 'D' and 'SD' were 'No'. The hypothesis was tested using chi-square for independent variables.

## Result and Discussion

**Table 1: Responses on waste disposal and accumulation**

Item	'Yes' Responses	'No' Responses	Total	Percentage of 'Yes'	Percentage of
1-5	543	657	1200	45.25	54.75

Table 2: The table presents respondents opinion on waste management – Reduce, Reuse and Recycle.

**Table 2: Response on Waste Management**

Item	Waste management	'Yes'	'No'	% Yes	% No
7-12	Reduce	893	306	41.4	24.8
13 – 19	Reuse	798	592	37.1	47.9
20-23	Recycle	462	338	21.5	27.5
		2153	1236		

### Hypothesis Testing Result

Data were used from the calculated percentage on waste management to test the hypothesis.

Item	Alpha	Df	X <sup>2</sup> Cal	X <sup>2</sup> Table value	Decision
7-23	0.05	2	38.9	5.99	Ho Rejected

### Discussion

Table 1 which sampled the opinions of the respondents on how and where they dispose their households, office, business centres and market waste. The result revealed that majority of the people discard their wastes in the waste bin at home, office or business centres but emptied them on a daily basis in an open space or on the major street. In the case of a market place, the wastes were emptied on the road side. It was noted that the women who were employed by the government to 'Keep Jos Clean' still sweep the sides of the roads but dump the waste in the open space as well. It was also revealed that, some of these open spaces where the waste are dumped are near residential settlements. It is believed that, those settlements near a wasteful landfill are exposed to the risk of polluted air which can hamper their health as well as contaminating their source of drinking water.

**Table 2:** This table discusses issues on waste management – reduction, reuse and recycling, whether the people practice waste management by observing the '3rs'. From the people opinions, it was revealed that many people throw away what they no longer need while most of the purchased items are non-reusable and non-recyclable. Most of the items purchased by the people are packaged in disposable and polythene leather or cartons which all add to the amount of waste accumulation. Other responses showed that majority of the people reuse plastic bottles to store other liquid which suppose to reduce the discarded waste. But from other responses, items were purchased in bits which may likely be due to low income which has increased the quantities of wastes disposed instead of reducing it. On the issue of making compost out of dumped waste like spoil vegetables, fruits carcasses of animals, the responses was null. Santra (2005) revealed that the major cities of India utilized compostable wastes for

the preparation of biogas which generated income to the government. On the other hand, most people preferred buying items in disposable packs instead of recyclable containers. It was also revealed that there were no recyclable offices near the people which may likely be the reasons why large quantities of discarded wastes which have recyclable value some major streets.

**Table 3:** The hypothesis tested revealed that the calculated chi was more than the table value of chi. This means that, “there is no significance relationship between awareness on waste management and the amount of waste disposal” was rejected. There is therefore a significant relationship between waste management and the amount of waste disposal. When people are aware of waste reduction, reuse and recycling such knowledge is expected to reduce or checkmate the quantity of waste disposed. It is important that people should imbibe the habit of waste reduction, reuse and recycling because it is environmental friendly. It cannot cost any one who practices it; it is rather of benefits to the health statutes of the communities, as a popular saying that, cleanliness is next to godliness.

### **Recommendations**

The study makes the following recommendations based on the findings:

- i. It was recommended that the monthly compulsory sanitation be observed by everybody in the state which should be supervised by the Plateau State Environmental Protection Agency.
- ii. Government should enact a law that regulate the quantity of waste thrown by taxing people on ‘pay-as-you throw’ basis.
- iii. Companies should be tasked on packaging products with reusable and recyclable packages.
- iv. National Orientation Agency (NOA) should sensitize people the danger of uncontrolled waste disposal and the benefit of waste reduce, reuse and recycle.
- v. The government should incentivize a programme by giving a token that will motivate the people to gather waste with reusable and recyclable value.
- vi. Media can air sensitization programmes sponsored by the government on waste management.

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## Appendix I

### Questionnaire on Waste Disposal and Management

**Instruction:** Please tick (✓) against the option that best suits your opinion.

- SA = Strongly agreed  
A = Agreed  
D = Disagreed  
SD = Strongly Disagreed

S/No		SA	A	D	SD
1.	I discard my household market/office waste in the incinerator.				
2.	I emptied my waste bin every day.				
3.	I burnt them everyday.				
4.	The wastes are collected from street every week.				
5.	I throw my household/office/business on the street.				
6.	My house is located near a waste dump.				

### Waste Reduction

S/No		SA	A	D	SD
7.	I purchase household, office, business items on a daily basis.				
8.	Most of the items I purchase are non-recyclable and non usable.				
9.	I resell/items I no longer need.				
10.	I donate the items I no longer need to the needy.				
11.	I throw what is no longer useful.				
12.	The item I purchase are packaged in polythene and carton.				

### Waste Re-Use

S/No		SA	A	D	SD
13.	The items I purchase I reuse then over and over again.				
14.	I purchase durable items for my household.				
15.	I purchase my items in bulk.				
16.	Some discarded item as polythene I use for making fire.				
17.	I compost waste for use on the farm.				
18.	I reuse bottles to store other liquid.				
19.	I repair broken items or spoil appliance to be used again.				



**Waste Recycling**

S/No		SA	A	D	SD
20	I purchase items with recyclable label on them.				
21.	I sort out recyclable wastes from my waste bin.				
22.	I purchase goods packaged in disposal packs.				
23.	There is no recycling office around my street.				

**Appendix II**

**Chi-Square Statistics**

	Reduce	Reuse	Recycle	Total
Yes	41 (C1)	37 (C3)	22 (C5)	100
No	25 (C2)	48 (C4)	27 (C6)	100
Total	67	85	49	200

$$Fe = \frac{Ct \times Rt}{Gt}$$

$$C1 = \frac{41 \times 100}{67} = 61.2$$

$$C4 = \frac{48 \times 100}{85} = 56.4$$

$$C2 = \frac{25 \times 100}{67} = 37.3$$

$$C5 = \frac{22 \times 100}{49} = 44.9$$

$$C3 = \frac{37 \times 100}{85} = 43.5$$

$$C6 = \frac{27 \times 100}{49} = 55.1$$

$$\begin{aligned}
 X^2 &= \frac{(Fo - Fe)^2}{Fe} \\
 &= \frac{(41-61.2)^2}{61.2} + \frac{(25 - 37.3)^2}{37.3} + \frac{(37 - 43.5)^2}{43.5} \\
 &= \frac{(48-56.4)^2}{56.4} + \frac{(22 - 44.9)^2}{44.9} + \frac{(27 - 55.1)^2}{55.1}
 \end{aligned}$$

$$= 6.67 + 4.06 + 0.99 + 1.25 + 11.6 + 14.33$$

$$X^2 = 38.9$$

Critical  $X^2$

Alph. 0.05

$$\begin{aligned} \text{Df} &= (-1) (C-1) \\ &= (2-1) (3-1) \\ &= (1) (2) \\ &= (2) \end{aligned}$$

Critical value of  $X^2 = 5.99$   
Calculated  $X^2 = 38.9$

# How Much Does A (European) Head Of State Cost?

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## **Abstract**

The chief of states in the West European monarchies do have a civil list paid by the state budget. In many of these countries are this figures not well knowing by the public and this means the tax payers. But the situation in these group of monarchies is various because the history and political evolution was different. Also the some monarchies do have allocations for other members of the royal family. Beside the republics with a different system and more openness. The transparency and the fiscal system in these countries is also different.

Based on the national budgets of the countries this study makes an examination of the public figures.

## Introduction

This study examines in some detail the cost in budgetary terms to national treasuries of the head of state of ten different West European countries. These include eight monarchies, where monarchy is understood to be a form of parliamentary democracy which has a king, queen, or grand duke as the head of state. The monarchies concerned are Spain, Norway, the Netherlands, the United Kingdom, Belgium, Denmark, the Grand Duchy of Luxembourg, Sweden, whereas the republics are France and Germany.

The preparation of this study required that considerable time had to be devoted to the examination of the particularities of the various national and not really comparable budgetary systems of the countries involved. The individual budgetary systems are very different both in form and structure.

Specifically this article pursues the following lines of inquiry:

- How much does the head of state cost the treasury?
- Do other members of the family of the head of state have a right to an allowance from the treasury?
- Are the expenses concerned published in the national budget and/or are they transparent?
- Is it in fact possible to compare the various ways of financing the head of state?

No investigation of the personal property/wealth etc. of the heads of state was carried out. The reason is simple, there is in effect insufficient information available for an accurate study.

Finally this study attempts to draw a valid comparative conclusion.

## 1. Spain

Article 65, 1 of the Spanish constitution states that "the King receives an annual sum from the State Budget ...". Royal Decree no. 434 of 6 May 1988 regulates the amount of this sum and how it is used for the *Casa de su majestad El Rey*<sup>2</sup>. This Spanish version of the Civil List serves to support the sovereign's work as head of state. It covers the wages of persons who are not civil servants and the ceremonial costs. The expenses of state visits, receiving foreign delegations acting in their official capacity and the security of the members of the royal family are borne by the state<sup>3</sup>.

The King is free to spend the annual grant on the *Casa de su majestad El Rey* and on other members of the royal family as he sees fit. Up to and including 2009 the grant was adjusted in line with inflation.

The expenses of the *Casa El Rey* are subject to the tax and employment legislation currently in effect. Similarly the King, the Queen, the Prince and Princess of Asturias (the heirs to the throne) and the *Infantas* and their husbands are subject to the current arrangements of tax law in respect of their income and property.

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<sup>2</sup> M. FERNANDEZ-FONTECHA TORRES, Dotación de la corona y casa del Rey, in: monografías, Jornadas nr. VII de derecho Parlamentario, 2001.

<sup>3</sup> F. BALAGUER CALLEJON (ed.), Manual de derecho constitucional, Madrid, Multilibro, 2008 (2 volumen).

The Royal Family is nonetheless allowed to live in the state palaces. The costs of the maintenance and upkeep of the *Zarzuela* palace and other royal properties made available by the state are borne by an autonomous agency called *El Patrimonio Nacional*.

In view of the restraints on the Spanish budget, the appropriation for the 2010 civil list was, at the request of the King, not adjusted for inflation and remained at the 2009 level. In 2011 a reduction of 5.2% was implemented, again because of the need to curb Spanish public spending.

The cost of the civil list has evolved as follows:<sup>4</sup>

2009	€	8,896,900
2010	€	8,896,900
2011	€	8,434,300
2012	€	8,264,280
2013	€	7,933,710

In Spain the political world has decided that the King – as the head of state – should set the example regarding cutting back expenditure in order to comply with EU budgetary rules on budget deficits.

After being frozen at the same level in 2009 and 2010, the civil list of the *La Casa del Rey* has been the subject of a cut of about 10% between 2010 and the present.

Following the 2011 criminal investigation of Inaki Urdangarin, the King's son-in-law, the *Palacio de la Zarzuela* way in which Spain's civil list grant is spent was made public.

The details were published on the palace's website and the Spanish media have devoted abundant attention to the subject ever since Christmas 2011.

The *Casa de Su Majestad el Rey* has provided the following overview of its expenditure in a document entitled *Presupuesto anual – dotación económica*.

In 2013 the € 7.9 million paid for the civil list was disbursed as follows according to the website of the *Casa de Su Majestad el Rey de España: presupuestos anuales*:

- The Royal Family: (€ 699,128 / 8.81 %)

Compared to 2012 this sum has been reduced by € 115,000 and it is shared among the various members of the Spanish royal family as follows: since 2011 the King (*El Rey*) receives € 292,752 (€ 140,519 as pay and € 152,233 as representation expenses). How the remainder is spent is less clear, and all that is said is that no more than € 206,000 is set aside for the representation expenses of the Queen (*La Reina*) and the two princesses (*las Infantas*). The Crown Prince (*el Príncipe de Asturias*) received a sum of € 146,375 in 2011, although in 2013 they shall have to submit their expenses for approval to the King.

- Staffing costs (*los gastos de personal*): 48,78%
- Current expenditure on goods and services (*los gastos corrientes en bienes y servicios*): 40.56%

According to the figures shown above the item that weighs most heavily on the Spanish Civil List is the spending on staffing.

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<sup>4</sup> Presupuestos Generales del Estado-Sección: 01 Casa de su Majestad El Rey – Programa: Jefatura del Estado.

It should nonetheless not be forgotten that many of the costs of the Spanish Royal Family are met by appropriations from the budgets of various ministries. According to the left wing Spanish daily *El Público* (26 December 2011) the true cost of the Spanish monarchy is close to € 60 million.

## 2. Norway

Article 24 of Norway's constitution provides that Parliament, the *Storting*, should set aside an annual sum for the Civil List to be borne by the state budget.

The King is free to spend this sum on the Royal House or *Kongehuset* and his family. The allocation is subject to annual indexation to take account of inflation.

The King, the Queen, the Crown Prince, *Haakon Magnus*, and the latter's wife are exempt from taxation. Furthermore their personal financial situation is not made public. The other members of the Royal Family (for example the King's daughter, Princess Martha Louis) are nonetheless subject to all current tax legislation and regulation.

The annual amount made available for the *Kongehuset* is mentioned under two items in the Norwegian state budget, namely: salary and costs<sup>5</sup>.

The Norwegian Royal Family may use the various palaces that belong to the state. The costs of authorized state visits, domestic ceremonies and security are also borne by the state budget.

This sum is divided up as follows:

-- a salary or apanage (*Apanasje*) for the King (*Kongen*) and Queen (*Dronningen*):

2012-2013	NOK	10 million	€ 1.2 million
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-- the costs of the Court (*Det Kongelige Hoff*)

2012-2013	NOK	158.6 million	
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This comes in total to NOK 168.6 million (or € 21.3 million) for the head of state and his wife in the 2012/2013 budget year.

Apart from this the state budget provides for allocations for the Crown Prince (*Kronprinsen*) and the Crown Princess (*Kronprinsessen*). These too are also divided into personal expenses and operating costs<sup>6</sup>.

These are the salary or apanage (*Apanasje*):

2012-2013	NOK	8.3 million	€ 1million
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And the operating costs:

2012-2013	NOK	17.2 million	
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This thus makes a total for the heirs to the throne of 25,5 million NOK ( 3,2 million euro )

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<sup>5</sup> Statsbudsjetter 2012-13, Programområde oo "Konstitusjonelle institusjonen – Programkategori 00.10 "Det Kongelige Hus".

<sup>6</sup> Ibid.

The total cost of the civil list and the allocation has changed as follows:

2009-2010	NOK	211.3 million	as result of the marriage grant
2010-2011	NOK	196.4 million	As result of renovation costs
2011-2012	NOK	190.6 million	
2012-2013	NOK	194.2 million	€ 24.5 million

The Norwegian state budget also publishes the costs relating to the Royal Family mentioned in the various departmental and ministerial budgets. These are then reproduced in the civil list. To be specific these are NOK 72.9 million for the costs of the state palaces made available to the crown, NOK 8.9 million for foreign travel on official business (Ministry of Foreign Affairs ), NOK 44 million of military costs (Ministry of Defence ) for the aides-de-camp and the operation of the royal yacht. All together this comes to a charge on the budget NOK 125.8 million (€ 15.9 million). The security expenditure for the royal family is not mentioned.

When these costs are added to the civil list and the allocation we arrive at a transparent sum of NOK 320 million or € 40.5 million as the cost of Norway's monarchy.

Every year the court publishes a report (*Arsberetning – Det Kongelige Hoff* ) that includes a financial analysis of the budgetary situation of the royal family.

This report publishes the civil list accounts and the crown prince's allowance.

It gives an extremely detailed overview of the relevant expenditure. For example, the annual reports for 2011 and 2012<sup>7</sup> show that the crown prince's account closed with a surplus of NOK 1.1 million, which was then carried forward to the next financial year. In 2011 the civil

list closed with a surplus of NOK 11 million, whereas in 2012 it closed with a deficit of NOK 3.6 million.

The annual report also goes into detail about all expenditure, and provides among other things an extensive statement of day-to-day costs such as private travel, the costs of electricity and heating, and similar.

The income and expenditure account and the balance sheet are internally audited by the head of administration of the Royal Household (*Hoffsjef*) and externally by an accounting firm (Deloitte).

### III The Netherlands

In 2008 there was a prolonged discussion between the political parties about the costs of the monarchy.

Changes to the law on the financial status of the Royal House were approved by the Dutch Lower House ( Tweede Kamer ) on 3 July 2008 and by the Senate (*Eerste Kamer*) on 18 November 2008.

Article 40 (1) of the Dutch constitution determines the legal basis of the Royal allocations.

Each of these allocations is divided for budgetary purposes into two parts, namely

- an A component that relates to the income element
- a B component for the costs of personnel and tangible expenses.

The A component is thus what is paid as income. The basis is the amount mentioned in the law on the financial status of the Royal House. This amount is adjusted in the same proportion as the 2010 remuneration of the Vice President of the Council of State diverged from his 2007 remuneration.

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<sup>7</sup> *Arsberetning det Kongelige Hoff* (Annual Report) 2011 en 2012.

The B component covers expenditure on personnel and tangibles. Half the basic amount determined by the financial status law is adjusted for that proportion by which the remuneration in 2010 of the non-military personnel of the state differs from the 2007 remuneration. The other half is linked to rises in the consumer price index.

The abdication of the Queen in favour of Crown Prince Willem Alexander on 30 April 2013 led to changes in the Dutch system.

Hitherto there had been a civil list for Queen Beatrix and allocations for the Crown Prince and his spouse Princess Maxima, but as of 30 April 2013 the civil list is approved for King Willem Alexander, and an allocation is granted to the “spouse of the King” and to the “Queen who has abdicated from the throne”.

### 3.1. The Civil List and the allowances

In the Netherlands too the civil list refers to government payments to the head of state. The King (or Queen) received and receives the following sums either as component A or B (in euros):

	Component A	Component B
2009	813,000	4,188,000
2010	834,000	4,268,000
2011	829,000	4,314,000
2012	830,000	4,358,000
2013 <sup>8</sup>	825,000	4,408,000

This gives the following totals in euros for the years concerned:

--	2009	5,001,000
--	2010	5,102,000
--	2011	5,143,000
--	2012	5,188,000
--	2013	5,233,000

During the 2009-2013 period the A component rose by 1.4% and the B component by 5.2%. From this it may be concluded that the rise in the personal remuneration of the head of state was only limited and significantly less than the B component.

### The Crown Prince and the Crown Princess

Prior to 30 April 2013 the heir to the Dutch throne and his spouse received a separate allowance. The sum of the Components A and B for the Crown Prince were as follows:

--	2009	1,348,000
--	2010	1,406,000
--	2011	1,386,000
--	2012	1,398,000
--	2013	1,410,000

During the 2009-2013 period component A rose by 1.6% and component B rose by 4.4%.

Before her coronation till queen Crown Princess Maxima received as follows:

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<sup>8</sup> As of 30 April 2013 this sum goes to King Willem Alexander.



--	2009	611,000
--	2010	624,000
--	2011	626,000
--	2012	630,000
--	2013	634,000

It may be seen that the total allocation for the Crown Princess rose by 3.7% during the 2009-2013 period.

### **The Consort's Allowance**

As of 30 April 2013 Queen Maxima receives a separate allowance as consort to the King. This amount is significantly higher than her former allowance as Crown Princess.

- component A: 327,000
- component B: 574,000

In total the allocation made to the new Queen comes to € 910,000, close to 45% more than her allocation as Crown Princess.

### **The former head of state**

Since her abdication Princess Beatrix has enjoyed an allowance comprising the following elements:

- component A: 466,000
- component B: 947,000

This gives a total charge on the national budget of € 1,413,000 or close to four million euros less than when she was Queen.

### **Overall**

During the 2009-2013 period the total cost of the civil list and the two allowances (in euros) has developed as follows:

- 2009: 6,961,000
- 2010: 7,132,000
- 2011: 7,155,000
- 2012: 7,216,000
- 2013: 7,277,000 (until 30 April 2013)
- 2013: 7,547,000 (after 30 April 2013)

During the 2009-2013 (until 30 April) period the overall cost of the Dutch Civil List plus allocations increased by 4.5%. However with the arrival of the new monarch this percentage has risen to 7.8%. The increase is not due to changes in the amount of the civil list, but rather to the increase in the total value of the allocations. For example the allocation for the new queen has increased by € 367,000, and the dowager queen receives € 3,000 more in allocations than did the former crown prince. Although the former head of state receives an allocation that is significantly lower than her former civil list, the dowager queen still receives a higher allocation than does the new Queen.

### **3.2. Operational Spending**

In the second place come the operational expenses of the King. These expenses are mentioned in Article 2 of the State Budget<sup>9</sup> and comprise the sums related to the functioning of

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<sup>9</sup> Article 2, rijksbegroting 2013 (deel: begroting van de koning).

the sovereign. They are submitted to the Minister President by the Royal House in the form of a declaration.

As of 2010 this second part of the budget of the royal budget is entirely different from those of previous years.

This part of the royal budget states in great detail what is to be understood by this expenditure, namely: payroll expenses of the Royal House, expenditure on tangibles, use of private and air force planes, Groene Draeck ( was a gift from the State to the former Crown Princess (now the dowager Queen) in 1957. The costs of maintaining the estate are borne by the State. In practice this work is carried out by the naval shipyards ) and the costs of travel to the “ Caribbean Territories “.

In 2013 the total charge to the budget for the operational costs comes to € 26,995,000 compared to € 26,682,000 in 2012.

### 3.3. Transferred Expenses

The third part of the budget of the monarch is made up of transferred expenditure. This is expenditure which does not pass through the Royal House, but does form part of the expenditure which is functionally associated with the sovereign. Such spending is paid subject to the responsibility of the authorized Ministers. It concerns the spending for the “Rijksvoorlichtingsdienst”(RVD) (state public information service ), the military staff acting as part of the royal house and the budget appropriations for the King’s Cabinet. The job of this cabinet is to assist the head of state in the performance of his constitutional duties. This is understood to mean the contacts between the King and members of the government, the processing of petitions to the King, contacts with government bodies as well as the archiving, recording and transfer of state documents

This gives a total of € 5,685,000 (2012: € 5,597,000). The sharpest rise has been the costs of The King’s Cabinet, the result of the ascension of the new King. Until the end of April 2013 (when Beatrix was still on throne) the total came to € 2,402,000. When the new monarch was sworn in the it was increased by € 24,000.

### 3.4. Total Cost of the Monarchy

To summarize, the total cost of the Dutch Royal House in 2013 can be estimated at:

■ direct payments:	€	7,547,000	(civil list and allocations)
■ operational costs	€	26,995,000	
■ transferred expenditure	€	5,685,000	

As a result the total budgetary may be estimated at:

-- 2013	€	40,227,000	as of 30 April 2013
-- 2013	€	39,933,000	
-- 2012	€	39,405,000	
-- 2011	€	39,170,000	
-- 2010	€	39,673,000	

During the 2010-2013 period the known cost of the Dutch monarch rose by 1.4%.

The figures for these years would indicate that the overall cost of the monarchy to the budget has been relatively stable.

The Dutch state places several palaces at the disposal of the King.

The RVD (the Dutch Government Information Service) does nonetheless release information about the property holdings of the Royal House (the King for example owns Chateau Drakensteyn, an official residence in The Hague, and the De Horsten estates at Wassenaar and Voorschoten).

The personnel costs of running these palaces are part of the operational budget of the Queen's Household, their upkeep, however, is borne by the state.

Nonetheless members of the Royal House are expected to assume the costs of all the upkeep and maintenance of their private properties.

### 3.5. Tax Status

The provisions of the second paragraph of Article 40 of the Dutch constitution and the Law of 22 November 1972 on the Financial Status (of the Royals) mean that the three persons who currently receive an allocation are exempt from paying tax on the allocations made for them in the budget. Nor is there any wealth tax payable on that part of their wealth used for the exercise of their monarchical duties. They are only liable for wealth tax on their private wealth<sup>10</sup>.

Similarly those vehicles used for public duties are exempt from traffic tax.

Furthermore anything the head of state or his or her probable successor receives by reason of inheritance or gift from another member of the Royal Family receives is exempt from death duties.

With respect to gifts to third parties it is so that these are only exempt when these are made in the context of their function and official capacity. Examples of this are gifts made in connection with the Royal Prizes. For the rest the head of state and the heir apparent are exempt from taxation on gifts and inheritances within the Royal House. Other members of the Royal House are not exempt from such taxes.

### 3.6. The Annual Report

Since 2010 an annual report<sup>11</sup> concerning the *Het Koninklijk Huis* has been prepared. The first report comprised roughly 160 pages, with two pages devoted to the budget items for the civil list and the allocations. The Annual Report also considers the tax status of the Royal Family.

Other items considered in this report include the activities and organization of the services of the Royal House. The first report cost € 50,000 (see explanatory notes for the 2012 budget). The Lower House has nonetheless demanded that the expense of producing subsequent editions must be attributed to the operational expenses.

In conclusion one may say that the Dutch system is relatively transparent. It considers each entitled person separately and is broken down into various operational components. On the other hand the auditing process is not well developed.

There is a degree of openness as such, which is due to budget system and the discussions about this item of the budget in the Lower House. Furthermore there is also an annual report, although the latter is extremely vague with respect to budgetary matters.

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<sup>10</sup> Their tax status is dealt with in the annual overview of the Royal House (e.g. on p. 144 for 2010).

<sup>11</sup> E.g. *Het Koninklijk Huis, Jaaroverzicht 2010*. Financial matters are discussed on p. 144 and subs.

#### 4. The United Kingdom

The United Kingdom uses a budgetary system for its royal family that is rather different from that used on the continent.

The budget year starts on 1 April and ends on 31 March, so that the 2013-2014 budget considers the period from 1 April 2013 to 31 March 2014 inclusive.

##### 4.1. The Old Financing system

Further to the Civil List Act of 1972 a report about how the Royal Family is financed must be submitted every ten years. This report takes the form of the *Report of the Royal Trustees* and was most recently submitted to the Commons on 22 June 2010 by the Prime Minister, the Chancellor of the Exchequer and the financial administrator of the Royal Householder, the Keeper of the Privy Purse.

The latest report contained a number of radical changes to the system.

A sum of one million euros was to be made available in the 2012-2013 budget for the costs of organizing *The Queens Diamond Jubilee*.

Under the old system finance came from a number of different sources.

The first of these is the Civil List, or *Queen's Civil List*. This is financed from the state budget on an annual basis and is set by Parliament. The amount of the Civil List is determined for a period of ten years. It is index-linked and is intended to cover the Queen's disbursements in connection with her duties as head of state.

As part of the effort to drive down public spending the total value of the Civil List was reduced by 8.5% as of 1 January 2011.

In addition to the "civil list" there are the "parliamentary annuities" paid to Prince Philip, the Duke of Edinburgh, as prince consort. This sum is paid to defray the expenses of the official duties of the Prince. In 2011 it was cut by 10%. Yet another source of finance are the *grants in aid*. This is money paid to the Royal House by the Department of Culture, Media and Sport for the expenses of the Royal House related to information and telecommunications. Furthermore the finance provided by this Department covers the spending on property services for the upkeep of the buildings that the Queen uses, such as Buckingham Palace, Windsor Castle, etc. These buildings are indeed state property.

Every year the Department for Transport also pays part of this allocation to the Royal House to finance the travel of Royals to official functions.

Lumped together this gives the following sums (in millions of pounds sterling)

	2011/2012	2010/2011
Queen's Civil List	13.6	13.7
Grants in aid		
- Property services	12.2	11.9
- Communications and Information	0.4	0.5
- Royal Travel	6.1	6.0
Total in £ x million	32.3	32.1

On the basis of these figures one may conclude that spending on the Royal Household has been relatively stable in recent years (€ 38 million in 2011/12).

#### 4.2. The New Financing System involving the *Crown Estate*

The new law on how the British monarch is financed, known as *The Sovereign Grant Act* was adopted on 18 October 2011<sup>12</sup>. This new financial model for the British Monarchy can be summarized as follows:

- as of the 2013/14 financial year 15% of the profits from the Crown Estate are to go to the Civil List. This figure will be reviewed every five years by the Royal Trustees, who as mentioned above are the Prime Minister, the Chancellor of the Exchequer and, the Keeper of the Privy Purse;
- the *parliamentary annuity* (£ 359,000) paid to the Prince Consort – Philip, Duke of Edinburgh – will continue to exist and be paid directly by the Treasury;
- the allocations (worth £ 1.2 million in 2011) in favour of the other members of the Royal Family (including the Queen’s other children) were abolished. In recent years these allocations had been repaid by the Queen to the treasury.

The *Crown Estate*<sup>13</sup> is responsible for, among other things, the maintenance of Windsor Great Park and Holyrood House, the Queen’s official residence in Scotland - which stands opposite the Scottish Parliament in Edinburgh. Historically speaking the “Crown Estate” goes back to 1066, when certain lands were annexed by the sovereign. The basis of the modern version was established upon the ascent to the throne of King Georges III in 1760. The current arrangements for the Crown Estate are based on legislation dating from 1956 and 1961.

The *Crown Estate* is linked to the monarchy, but it is not the personal property of the Queen. The sovereign cannot sell the goods of the Crown Estate and its revenues do not accrue to the sovereign either. Even so the Crown Estate is not the property of the British state. The Crown Estate is administered by a board known as the *Crown Estate Commissioners*.

H.M. Treasury (i.e. the Ministry of Finance) is the most well represented party in this organization. Apart from this the Crown Estate submits an extensive report to Parliament every year.

The current asset value of the Crown Estate is estimated at £ 7,2 billion (€8,5 billion). It is a *statutory corporation* that manages agricultural lands, woodlands, buildings (including Regent Street and Regent’s Park), over half the country’s foreshore, Windsor Great Park, etc.

The surplus revenue (which varies between £200 and £250 million a year) of the Crown Estate is used in part to finance the Civil List, while remainder is paid into the British treasury.

#### 4.3. The Prince of Wales (The Crown Prince)

The Prince of Wales (Prince Charles in 2013) receives no money from the Civil List or from grants, rather he receives income generated from the revenues of the *Duchy of Cornwall*, which owns numerous estates in the south-west of England.

The income from the Duchy’s holdings is generated primarily from agriculture. These revenues serve to defray the costs of his wife and two sons (Princes William and Harry).

The costs of the official duties of the Prince of Wales are remunerated by *grants-in-aid*. The same mechanism is used for the costs of other members of the Royal Family when they perform official duties either in the home country or abroad.

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<sup>12</sup> See the website of *HM Treasury*.

<sup>13</sup> P. CONRADI, *The Great Survivors: How Monarchy Made It Into the 21st Century*, Alma Books, 2012, pp. 96 and subs.

Prince Charles is exempt from paying tax on the income he receives from the Duchy in south-west England. All in the entire Duchy manages roughly 54 thousand hectares of land. The Sovereign Grant Bill provides that the Prince of Wales has the entire profits from the Duchy at his disposal as of the age of 18. When still a minor the Prince of Wales is entitled to 10% of these profits. It may be noted that the annual reports of the Duchy of Cornwall show that the Prince of Wales voluntarily pays tax.

#### 4.4. Tax Status

What is nonetheless a fact is that the Civil List is not subject to taxation. The position is that these state resources are not paid to the Queen in her personal capacity but that rather they serve to allow her to perform her duties as head of state.

Since 1993 the Queen has voluntarily paid income tax on her private income. The property of the Queen is also subject to inheritance tax, albeit with an exception being made for inheritances that pass from the head of state to the successor. Regardless of the exceptions applicable to the Queen and the revenues from the Duchy of Cornwall, the remainder of the Royal Family are expected to comply with the normal rules of taxation.

*The annual "Royal Public Finances" report*<sup>14</sup> provides an extensive overview of how the money of the Civil List is spent.

This annual report is also scrutinized by an internal audit committee and the auditor of the Civil List.

#### 5. Belgium

The general rule, which is based on Article 89 of the constitution, is that the civil list cannot be reviewed during the reign of the head of state. The same constitution nonetheless makes no mention of grants to other members of the Royal Family. Since 1853, parliament has voted laws to provide a legal basis for the payments made to the heirs to the throne and the other children of the King.

The current financial crisis and the need to trim the budget have persuaded the Federal Government that the members of the Royal Family entitled to allocations had to make financial sacrifices since 2010. It was the first time in the history of Belgium that such a reduction had been implemented.

In 2012 the Federal Government wants the four allocations to be frozen at the 2011 level during 2012 and 2013. Specifically this meant that the annual adjustment for inflation applicable to these allocations would not be implemented for the 2012 and 2013 financial years. This measure means that there has been a reduction in both the nominal value and the buying power of the allocations. The measure must be viewed in the context of the cuts in the spending of the Federal authorities.<sup>15</sup>

In recent years the amounts have been as follows (in € x thousand):

	2009	2010	2011	2012	2013
■ Civil list	10,536	10,673	10,887	11,272	11,554
■ The heir to the throne, Prince Philippe	1,020	935	922	922	923
■ Dowager Queen Fabiola	1,594	1,462	1,441	1,441	923
■ Princess Astrid	353	324	319	319	320
■ Prince Laurent	350	311	306	306	307

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<sup>14</sup> E.g. Annual Reports 2011-12.

<sup>15</sup> Algemene Uitgavenbegroting 2013, Belgian Official Gazette 15 March 2013, p. 15351.

The King's Civil List increased over the period 2009-2013 period with 9.10%.

In 2012 King nonetheless announced that he would pay the difference with the previous year (effectively a sum of € 385,000) back to the State via the federal buildings agency ( " Regie der gebouwen " ) in the form of a financial contribution to the renovation works being carried out on the royal residences, which are state property.

In the same 2009-2013 period the allocations to Prince Philippe, the heir apparent, Princess Astrid and Prince Laurent declined by 11% each, whereas the allowance to Fabiola, the dowager Queen, was cut by 42%.

This gives the following totals for the civil list and the allocations paid to the members of the Royal Family:

- 2009: € 13.853.000
- 2010: € 13.704.280
- 2011: € 13.878.000
- 2012: € 14.263.000
- 2013: € 13.927.000

This shows that in the 2009-2013 period the overall combined cost of the civil list and the allocations has remained relatively stable. This is because of the cuts in the allocations and particularly in that of Fabiola.

The civil list of the King is adjusted on the basis of three indicators, namely:

- an annual adjustment based on the consumer price index;
- a triennial adjustment based on the pay levels of the civil servants working for the federal government;
- a triennial adjustment based on the employer's social security contribution.

In principle the other allocations are annually adjusted to keep pace with inflation as indicated by the consumer price index.

There is no form of oversight or scrutiny of the civil list and the allocations either by the federal Government or by Parliament ( House and Senate ). The amounts of the civil list and the allocations are entirely exempt from taxation.

Many of the costs of and for the Belgian Royal Family are taken up in the budgets of other departments (including travel and security).

The head of state has the use of the state-owned palaces in Brussels and at Laken.

Although the civil list and the allocations are exempt from tax, the members of the Royal Family must pay tax on any income from private sources, and their private vehicles are liable for road traffic tax.

Excise, import duties and VAT is not paid when making purchases charged to the civil list or the allocations. Even so such indirect tax must be paid on private purchases.

There is, however, no legal basis for these tax exemption rules.<sup>16</sup>

Specifically Belgian arrangements are the *Royal Trust* (Koninklijke Schenking (NL) /*Donation Royale* (FR)) and the *Royal Collection*. The Royal Trust administers a number of buildings and financial holdings. It is supposed to be financially self-supporting and consequently receives no money from the budget. Various members of the royal family member live in buildings administered by the Trust.

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<sup>16</sup> H. MATTHIJS, *Overheidsbegrotingen*, Die Keure, 2009, p. 196.

## 6. Denmark

The arrangements in Denmark are based on Law no. 491 of 7 June 2001 on the Civil List (the state civil list annuity – Appanage) for Queen Margrethe II.

This Law implements § 10 of the Danish constitution, which provides for the existence of a civil list.

The Law on the Civil List referred to above and the 2012/2013 budget (the Danish financial year starts on 1 October and ends on 30 September) form the basis for the allocations made to the following members of the Royal Family:<sup>17</sup>

- the Queen (*Dronning*) receives DKK 76,753,524 (DKK = Danish krone) (€ 10.3 million). She is expected to pass 11.5 % of this amount on to other members of the family, so that her net allocation is DKK 67,926,868 (€ 9.1 million).
- the Prince Consort (*Prinsgemalen*): the French Count and former diplomat Henri de Monpezat receives 10% of the initial allocation made to the Queen, or DKK 7,675,352;
- Princess Benedikte (the Queen's sister) receives 1.5 % of the Queen's initial allocation, or DKK 1,151,304 .

The legislation on the civil list provides that the allocations for Queen and the Prince Consort serve to cover all costs related to their respective functions. As for Princess Benedikte the allocation is linked to her expenses for discharging her official duties.

The state makes various buildings and palaces available to the Queen so that she must only bear those costs affecting their interiors. This means that the costs of modernization, renovation and external maintenance are borne by the Danish state.

These three members of the Danish Royal Family are exempt from personal income tax and traffic taxes. The same three are also entitled to the refunding of any VAT they may pay to the state.

Even so the civil list legislation does provide that the Queen, the Prince Consort and the Princess are subject to the usual arrangements regarding death duties and land ownership tax.

Apart from these three members of the Royal Family, the legislation adopted in 2004 provides for allocations to the Crown Prince, his spouse and his brother as follows:

- the Crown Prince: DKK 18,892,688. He is required to pass 10% of this on to his wife (Princess Marie), so that in the 2012/2013 period his net allocation will be DKK 17,003,347;
- Princess Marie receives the 10% mentioned above or DDK 1,889,269;
- Prince Joachim (the Crown Prince's brother) receives DKK 3,339,300.

The cost of these three allocations comes to DDK 22,231,988 (€ 2.9 million).

For the 2012-2013 financial year the total cost of the civil list and the allocations comes to the DDK 98,985,512 (€ 13.3 million).

The exemptions regarding personal income tax and traffic tax also apply to the Crown Prince, the Crown Princess and Prince Joachim.

VAT is also refunded to them, albeit in a more limited way.

Every year the finances of the Queen and her Consort are subjected to examination by independent auditors.

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<sup>17</sup> Website: Kongehuset, økonomie: Statsydelsen 2012/13 (State civil list annuity).



Their report is published as part of the annual report of the Danish Royal House. From this report it is possible to see what net income is left to the Queen from civil list.

For example in the *Laes Kongehusets arsrapport 2011*<sup>18</sup> we read that in that year the Queen retained a net sum of DDK 0.9 million from the civil list after defraying all expenses.

The report also reports on the assets and liabilities of the Royal House.

For example the same 2011 annual report mentions fixed assets of DDK 9.7 million and DKK 26.5 million of current assets.

On the liabilities side of the balance sheet the reserves are entered at DKK 19.9 million the liabilities stand at DKK 16.3 million.

The audit refers to the entire civil list, i.e. the Queen, the Prince Consort and Princess Benedikte.

An annual audit is also made of the Crown Prince, his spouse and his brother. These audits are public in nature and are included in aforementioned annual report.

The members of the Danish Royal Family are also entitled to the repayment of the VAT by the state when the purchase is made in connection with their official duties.

## 7. Sweden

There are no constitutional arrangements regarding the civil list in Sweden. Following agreement between the government and the King in 1996, the head of state (*Statschefen*) is granted a lump sum every year. The provisions of Chapter 5 of the Swedish constitution have made the King a purely ceremonial monarch<sup>19</sup>.

Under this arrangement the Royal Court and Estates (*Kungliga hov- och slottsstaten*) has reached in 2005 a new agreement between the Swedish government and the most senior dignitary in the Royal Court, namely: the Marshall of the Realm (*Riksmarskalk*). It was stipulated that the expenditure of the Royal Court (*Hovstaten*) had to be set out in detail in the annual report.

The cost of Sweden's monarchy to the taxpayer has evolved as follows in recent years (in SEK: Swedish krone)<sup>20</sup>:

- 2010 SEK 124,852,000
- 2011 SEK 122,183,000
- 2012 SEK 123,501,000
- 2013 SEK 125,980,000 € 14,5 million

The agreement mentioned above also provides for at least one annual adjustment to the lump sum to accommodate inflation.

The reduction in the allocation in 2011 was the result of the 2010 contribution by the State to the wedding of the Crown Princess.

The agreement mentioned above states that 51% of this allocation (SEK 64.2 million) goes to the *Kungliga hov staten* (Court Administration). The other 49% (SEK 61.7 million) is spent on the *Slottsstaten* (or Palace Administration) .

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<sup>18</sup> Annual Report: The Royal House of Denmark 2011, p. 6 and subs.

<sup>19</sup> J. NERGELIUS, Constitutional law in Sweden, Kluwer, 2011.

<sup>20</sup> Source: Utgiftsomrade 2012/13 (item 4: Statschefen).

The first of these represents the costs of official duties, the transport, travel, administration, personnel, and the personal expenditure of the Royal Couple and the Crown Princess.

This part of the civil list is paid at the start of the year. The accounts are verified by auditors.

The second part goes to the Palace Administration. The Palace Administration manages the palaces, grounds and collections. The accounts are subject to the scrutiny of the Swedish Court of Audit (*Riksrevisionen*)

In Sweden no account is taken of the King's other children (Carl Philip and Madeleine) when determining the Royal Allocation.

The annual report referred to above<sup>21</sup> provides an overview of all the official receipts and expenditure of the second part of the civil list, i.e. the Palace Administration.

The 2011 annual report mentions a surplus of SEK 997 on this account. The main item of expenditure are the personnel costs, which represent roughly 57% of all spending.

The Palace Administration also benefits from the income generated by visits to the various palaces (SEK 75 million in 2011).

The day-to-day upkeep of these state buildings is paid for from this allocation, whereas major repairs and alterations are the responsibility of the "*Statens Fastighetsverk*" or National Property Board.

The Court's annual report referred to above goes into the finances of the *Slottstaten* in great detail. It provides a balance sheet for the Palace Administration that states both assets and liabilities.

All members of the Royal Family are subject to the tax regime applicable to all Swedish citizens.

## 8. Grand Duchy of Luxemburg

The civil list in the Grand Duchy of Luxemburg is a constitutional obligation based on Article 43 of the constitution. The constitution also provides that the State Palace at Luxemburg and Berg Castle are to be made available to the Grand Duke.

The Luxemburg budget contains the Civil List of the Grand Duke, the allocation granted to the former head of state and, as of 2012, the allocation to the heir apparent ( "*le grand duc héritier* "), although how much of this is effective remuneration is unknown.

The Luxemburg Parliament made the following sums (in euros)<sup>22</sup> available for the years under consideration (2009-2013).

	2009	2010	2011	2012	2013
-- civil list	1,040,320	1,057,618	1,077,355	1,120,280	1,131,882
-- personnel costs	4,524,133	4,601,864	4,608,563	4,752,616	4,959,659
-- representation	623,194	633,556	645,379	671,093	678,043

The expenses of the former head of state (*l'ancien grand duc Jean*) are as follows:

	2009	2010	2011	2012	2013
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<sup>21</sup> E.g. The 2011 Annual Report of the Royal Court.

<sup>22</sup> Source: Budget du Grand-Duché de Luxemburg 2013 (section 00.0 – Maison du Grand-Duc), p. 35.

--	personnel costs	1,298,396	1,313,448	1,360,377	1,418,531	1,363,906
--	representation	222,400	224,851	227,647	233,729	235,373

A budget appropriation is also made available to the Grand Duke for the operating costs and as well an appropriation for the civil servants seconded to him. These appropriations may also be used for “*l’ancien chef de l’Etat*” and the “*grand duc héritier*”.

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	
--	operating costs	815,600	768,800	686,000	686,800	686,000
--	seconded personnel	153,805	156,501	159,187	167,037	168,875

Since 2012 a new allocation of € 151,553 has been made available to the heir apparent.

The total cost to the state budget for the head of state, the former head of state and the heir apparent for the last five years is as follows:

■	2009	€	8,677,848
■	2010	€	8,756,638
■	2011	€	8,765,308
■	2012	€	9,200,086
■	2013	€	9,376,091

The overall increase in the cost to the Luxembourg state budget of the Grand Ducal Family came to a good 8% in the 2009-2013 period. This rise is due not only due to the new allocation but also to a general increase in all items except the operating costs. On the other hand that the Grand Duchy has experienced few problems in connection with its public finances.

The official state visits, the security of the head of state and the Grand Ducal Family as well as all major upkeep of the state palaces and castle are borne by the state budget.

A law on the private possessions of the Grand Ducal Family means that the Grand Duke and his family are exempt from private income tax and the wealth tax.

This private wealth (*le Fidécimmis de la maison de Nassau*) is intrinsically associated with the Crown and is administered by the head of the House of Nassau (*Maison de Nassau*), namely the regnant Grand Duke.

Apart from this the members of the Grand Ducal Family are also allowed to own private property which is beyond the control of the *Fidécimmis*.

Article 105 of the Luxembourg constitution allows the Court of Audit to carry out external controls of the civil list and the allocation, but in practice this does not take place.

## **9. The Republics**

In the following section we shall examine the cost to the state budget when a President serves as the head of state of a republic.

For the purposes of this article we have chosen to examine two West European republics: France and the Federal Republic of Germany.

France has a directly elected President and he represents the true centre of political power.

The German President is by contrast chosen by the plenary meeting of the *Bundestag* and the *Bundesrat*. The president is a ceremonial head of state.<sup>23</sup>

### 9.1. Federal Republic of Germany

The *Bundespräsident* or Federal President is appointed for a renewable period of five years. Since 23 March 2012 the office has been filled by Joachim Gauck.

The President receives an annual salary of € 217,000 (€ 199,000 in 2012) which is supplemented by an expense allowance of € 78,000 a year. This salary is set at ten ninths of the Chancellor's pay (*Gesetz über die Rechtsverhältnisse der Mitglieder der Bundesregierung* of 17 June 1953 and *Gesetz über die Ruhebezüge des Bundespräsidenten* of 17 June 1953 ). The President does not enjoy any special tax benefits. .

The federal budget presents the costs of the President in some detail. A distinction is made between the costs for the "*Bundespräsident*" and those of the "*Bundespräsidialamt*".

The first of these are the costs for the office of President. In 2013 these came to € 4.7 million (€ 4.5 million in 2012).<sup>24</sup>

The greatest charge on the budget for the German President are the costs of the "*Bundespräsidialamt*", which is essentially the administration of the head of state. The Federal budget earmarks € 20.9 million for this expenditure. The most striking of these costs are as follows:

■ Personnel costs	€ 11,000,000
■ Travel on Presidential business	€ 190,000
■ State visits	€ 1,500,000

During the past three years the Federal Budget appropriated the following sums for the President:

■ 2011	€ 24,400,000
■ 2012	€ 23,900,000
■ 2013	€ 25,600,000

This represents a rise of 5% in the presidential budget over the period.

Also the President has the use of two state official residences.

The pension costs of the former presidents are not part of the presidential budget, but are a charge on the overall Federal Budget.

At the end of 2012 there were five former presidents drawing this pension.

Many of the costs relating to the office of the head of state are not mentioned in the presidential budget. Examples include the security of the head of state, the costs of using Luftwaffe planes and capital expenditure on the two official residences. The "*Bundesrechnungshof*" or Federal Audit Office is responsible for the external auditing of this budget.

### 9.2 The French Republic

The President of the French Republic is directly elected by the electorate for a period of five years. He may be reelected for a second term in office.

<sup>23</sup> M.C. BURKENS and P.P.T. BOVEND'EERT, *Het staatsrecht in de Bondsrepubliek Duitsland*, in: *Het staatsrecht in 15 landen van de E.U.*, o.c., pp. 141 and subs. and R. ZIPPELIUS and Th. WÜSTENBERGER, *Deutsches Staatsrecht*, München, Verlag CH Beck (32<sup>ste</sup> druk), 2008.

<sup>24</sup> *Haushaltsplan des Bundespräsidenten 2013*, (Einzelplan 0101, titel 42101).

The Head of the French state has all political powers and names the Prime Minister, who heads the government on behalf of the President.<sup>25</sup>

Until 2007, most expenditure in connection with the French presidency was simply part of other budgets, such as Internal Affairs, Defence and so on.

Starting in 2008 and further to a decision by President Sarkozy, all expenditure relating to the presidency has been consolidated in a single budget known as the *Elysée* budget.<sup>26</sup>

The security of the head of state and its cost, however, continues to be borne by the French state. This means that these costs cannot be found in the *Elysée* budget.

The table below shows the budget appropriations for the French Presidency as of 2008:

■	2008	€	109,900,000
■	2009	€	112,300,000
■	2010	€	112,500,000
■	2011	€	110,100,000
■	2012	€	111,700,000
■	2013	€	106,200,000

This consolidated budget is very different from earlier years. For example in 2005 the budget for the Presidency was only € 31.9 million, the difference being that at that time most of the spending was tabulated separately in the budgets of various Ministries. During the past few years the level of the presidential budget has remained more or less steady and President Hollande has taken steps to cut back the presidential allocation by 5% as of 2013. This measure has, of course, everything to do with the need to cut back public spending in France.

The French state budget and the audit of the accounts of the Presidency by France's Court of Accounts (*Cour des Comptes*) give a very detailed overview of all the receipts and expenses that have to do with the functioning of the head of state.

On 7 December 2012 the First President of the Court of Accounts handed over the audited accounts<sup>27</sup> for the period 2011 to mid-May 2012 (date of the transfer of office following the elections) to the President of the Republic. These accounts allow us to observe that the most significant items of expenditure in this budget are as follows:

■	Personnel	€	70,200,000
■	Purchases	€	4,700,000
■	Travel and receptions	€	12,800,000
■	Operating expenses	€	2,900,000

Staffing levels have been reduced from 1,051 persons at the end of 2007 to 917 persons at end 2010.

The President receives a pay package (including the reimbursement of his expenses) of € 231,732 a year and does not benefit from any special tax benefits. The President may use various state properties including the Elysée Palace.

The former Presidents ( anno 2013:three persons ) receive state pensions, while their widows receive a lesser survivor's pension.

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<sup>25</sup> M. TAMDONNET, *Histoire des présidents de la république*, Penin, 2013.

<sup>26</sup> Elysée: le budget de la république 2013.

<sup>27</sup> Rapport sur les comptes 2011 de l'Elysée et la gestion du 1/1/12 au 15/5/2012, Cour des Comptes Française

The Court of Audit has made a point of stressing that the President must bear his personal expenditure himself. There must be a strict distinction between the public and private expenditure of the President.

The Presidential budget was audited by the Court of Audit for the very first time in 2009.

The budget of the President is discussed in the standing parliamentary commission for finance ( "*commission des finances* " ). In 2008 the head of state submitted a report on his budget ( "*Rapport de gestion* " ) to the French Parliament for the very first time.

## 10. Conclusion

The public budget systems of the eight West European monarchies and the two republics considered use a variety of systems for the civil lists and allocations granted to their heads of state. For this reason it is very difficult to compare the systems with one another.

Nonetheless this study attempt to make a number of valid comparisons.

The first thing we may mention are the tax benefits. In the republics tax breaks are extremely limited and the civil list beneficiaries of Sweden and Spain are not allowed any tax privileges either. Such tax benefits do, however, exist in Belgium, Norway, the Netherlands, Luxembourg and Denmark. Certain members of the British royal family are exempt from taxation, although they have voluntarily waived these privileges

The second item we may mention is the question of who is entitled to an allocation or inclusion in the civil list. In the Netherlands the system is limited to the regnant monarch and the crown prince with the possibility of allocations to the former monarch and his or her spouse. This arrangement is to some extent also applicable in Norway and in Luxembourg. A lump sum is set aside for the royal family in both Sweden and Spain.

Belgium and Denmark use a very extensive system of allocations. Belgium does not make separate allocations to spouses, but on the other hand all the children of the head of state are entitled to an allocation. The same thing happens in Denmark. In the republics an allocation is made only to the President.

In third place comes the arrangement regarding pensions. As the term in office of a monarch is longer than that of a president, the number of former heads of state drawing a pension is higher in the republics than in the monarchies. But the cost depends on the level of pension. So has the federal republic five ex-presidents with a budget cost of 1.085.000 euro p/y as salary without tax benefits. Comparing with Luxembourg and Holland is a former monarch expensive. The number of monarchs who enjoy a pension is relatively small and this situation only arises when the monarch abdicates.

Our fourth point of comparison is the transparency of the budgets. The most transparent system is that used in France, and to a lesser extent the German system. It is thus safe to say that the republics offer greater budgetary openness. With respect to the monarchies considered here, the budgetary system used the Netherlands, Norway and the United Kingdom are transparent. Budgetary systems that merely specify sums of money are used in Belgium, Luxembourg, Denmark, Spain and Sweden.

The study then examines whether the functioning of the head of state is the subject of an annual report containing details about the royal or presidential finances. In the two republics there is a current legal framework providing for such. In many of the monarchies we examined the royal finances are likewise the subject of an annual report, the exception are the Grand Duchy of Luxembourg, Spain and Belgium.

This brings us to the sixth point of comparison concerns the oversight of how the money made available to the head of state is used. The strictest supervision applies in the republics, while in Belgium, Luxembourg and Spain there is no oversight at all.

In Sweden such oversight is applied to only part of the civil list. There is more extensive scrutiny in the United Kingdom and Denmark.

The personal remuneration of the head of state is the seventh point for comparison. A formal specification of same is only made in the two republics, the Kingdom of the Netherlands ( component system ), and in Norway ( apanasje ).

In the other countries the personal pay of the head of state is not known. Only the website of the Spanish Royal Family mentions a sum in connection with the king. According to the figures available to us Norway's King Harold is the best paid (€ 1.2 million), followed by King Willem Alexander of the Netherlands, who receives € 825,000. Next would be King Juan Carlos of Spain with € 292,000. These monarchical remunerations are moreover exempt from tax, which cannot be said for the pay received by the " Bundespräsident " and the " President de la France ". Interestingly Germany's purely ceremonial president earns more than the omnipotent president of the Fifth Republic.

All in all we may say that the European presidents in general earn less than the monarchs. The same is true at EU level too and the President of the European Council, Herman Van Rompuy. He earns roughly € 350,000 per annum and pays tax in accordance with EU rules, although he does earn more than either the president of France or Germany.

Eight, every state nonetheless owns buildings that it makes available to the head of state.

Finally, we may refer to the extremely open French system which in fact provides an accurate view of the gross costs. For this reason the cost of the French president (€ 106.2 million in 2013) cannot in any way be compared with the totally opaque Spanish system (€ 7.9 million in 2013).

Similarly transparent systems exist to some extent in the Netherlands, the United Kingdom and the Federal Republic of Germany.

The absence of budgetary transparency means that many systems can simply not be compared.

The Dutch and Norwegian systems are broadly speaking comparable regarding their transparency. In which case the Norwegian system works out as more expensive bearing in mind the size of the population, although it must be said that the GDP of Norway is considerably higher than that of the Netherlands.

In conclusion we list the costs of the civil list and allocations in all ten countries in the table below (in millions of euros).

■ France	106.2	=	highly transparent
■ Norway	40.5	=	relatively transparent
■ The Netherlands	39.9	=	relatively transparent
■ The United Kingdom	38	=	less transparent
■ Germany	25.6	=	relatively transparent
■ Sweden	14.5	=	not transparent
■ Belgium	13.9	=	not transparent
■ Denmark	13.3	=	not transparent
■ Luxembourg	9.3	=	not transparent
■ Spain	7.9	=	not transparent

The federal or national state, whether republic or monarchy, is expected to attend to the security of the head of state, the provision of support personnel, accommodation, the cost of state visits, and similar.

The differences between the republics and monarchies can be seen in budgetary terms in the following three aspects:

- the personal remuneration, which is less for presidents,
- the higher pension costs in republics,
- the existence of allocations to family members in monarchies.

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Comparing the figures for costs is a tricky exercise, largely because the significance and content of the various civil lists and allocations are very different. Each country has after all had its own distinct institutional and political history.