

WHAT SOME COLLEAGUES SAY OF TEJUMOLA

THE HEAD (E. O. AYOOLA)¹

PROFESSOR HAROON OLADIPO TEJUMOLA
(1937 - 2011)

Professor Haroon Oladipo TEJUMOLA was born on 8th July, 1937 and died on December 25, 2011. He had his primary school education at Saint Peter's Anglican School, Minna, Niger State (1942 - 1949), and secondary school education at Ilesha Grammar School (1951 - 1955). He worked as a Clerk with the Treasury Department, Ministry of Finance, Secretariat, Ibadan from 1956 to 1957 and taught at Ife Grammar School, Ile-Ife from 1957 to 1958.

Professor Tejumola received his B.A. (Hons.) degree in Mathematics from the University College, Ibadan in June 1962 and a Ph.D. in Mathematics from University of Ibadan, Ibadan in April 1966. His doctoral research work was supervised by Professor J. O. C. Ezeilo. He was appointed Assistant Lecturer in 1962 and was promoted to Lecturer II in 1965, Lecturer I in 1969, Senior Lecturer in 1972, Reader in 1974 and then became a Professor in 1976. He was Head of the Department of Mathematics, University of Ibadan, Ibadan, from 1975 to July, 1979 and August, 1980 to July, 1983.

He had published in the most competitive and best Mathematics journals in his field of specialization. The reviews of his articles in the Mathematical Reviews (Mathscinet) published by the American Mathematics Society show major contributions in his field.

Professor Tejumola has his research interests in Stability Theory of Ordinary Differential Equations and the Existence of Periodic Solutions of Ordinary and Delay Differential Equations, as well as in Oscillation Theory and Boundary Value Problems.

Most of Professor Tejumola's research can be classified into the search for the following properties of solutions of considered non-linear differential equations:

- (A) The proof that solutions $x(t)$ of the differential equations satisfy $x(t) \rightarrow 0$ as $t \rightarrow \infty$, together with the appropriate derivatives;

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- (B) The proof that any two solutions $x_1(t), x_2(t)$ of the considered differential equations converges as $t \rightarrow \infty$ together with the appropriate derivatives;
- (C) The proof that the solution $x(t)$ is ultimately bounded, together with the appropriate derivatives;
- (D) The proof of the existence of at least a periodic solution, with the period of the forcing term, for the equation considered.

The period of Professor Tejumola's research work can be sub - divided into three stages. The early stage (1966 - 1975); the intermediate stage (1976 - 1985); and the present stage (1986 to date).

The study of whichever property varies with the equations considered and in not too complicated cases all the properties are studied.

The methods of investigations also vary. At the earlier stages of Professor Tejumola's research work, all the properties were studied using the well-known Lyapunov second method. This method requires the construction of a suitable scalar function, which is positive definite and whose derivative along the solution paths, is negative definite. The construction of these types of functions is an art rather than a rule, since there are no clear formulae for producing them. It must be pointed out that it is about a century now that the use and power of such functions was first introduced by the Russian Mathematician A.M. Lyapunov. However, whenever such a function is found, satisfying specific properties, many stability results can be obtained.

In the study of property D), in the early stage of Professor Tejumola's work, the well known Theorem of Schaefer was applied. However, at the intermediate stage, the method of approach was by employing the Leray-Schauder fixed point technique. This intermediate stage produced a very aggressive set of results which most researchers working in the area continue to cite.

The later stage of Professor Tejumola's research work, from 1986 to date, has focused on the existence of periodic solutions for nonlinear differential equations with delay. Again, employing Schaefer's fixed point techniques, suitable spaces and well known inequalities are used.

Professor Tejumola's research work centered on nonlinear differential equations of higher orders, starting progressively from second to third, fourth, fifth and to arbitrary odd ordered equations. While he does not just pick a problem for investigation sake, he (in his own words) picks problems "for which the properties of solutions

are so far difficult to establish". Another characteristic of Professor Tejumola in his studies is that he loves making things simpler and less complicated, even if he is discussing the same properties for the same problem. For example, he wrote in one of his papers that "The investigation (in an earlier paper) is however not altogether satisfactory, in that the proof of uniform boundedness property turned out to be too long and sometimes involved rather detailed and complicated study of the paths of solutions. This defect stemmed from the lack of a suitable scalar function . This paper arose from a desire to correct this defect. . As a consequence of this, we shall obtain a much shorter and simpler proof, in spite of weakening of the conditions on the nonlinear functions".

His early research publications deal with the problems of stability and boundedness of solutions and existence of periodic solutions for certain classes of higher order nonlinear differential equations of the dissipative type. His most recent works are on Non-dissipative Nonlinear Differential Equation of Arbitrary Odd (Even) Order. Professor Tejumola belonged to the pioneering Nigerian School of Ordinary Differential Equations and has helped to put University of Ibadan and Africa on the world mathematical map. Some of his successful former PhD students such as Professors A.U. Afuwape, S.A. Iyase and Bronnu Tchegani are today, themselves eminent Professors of Mathematics.

We recall his total dedication to the teaching and learning of Mathematics and his unequal capacity for mentoring the young and junior ones.

He retired from the service of University of Ibadan on October 1, 1996 and was subsequently engaged on contract appointment from October 1997 to June 2001. He served as a Professor in many other Universities in Nigeria and abroad. He was a Professor at University of Swaziland, Lagos State University and Redeemers' University, Mowe, Nigeria. He was a Senior Science Fellow, International Centre for Theoretical Physics, Trieste, Italy from May - July 1996; Visiting Professor, Lincoln University, Pennsylvania, USA, August 1989 - May 1992; Visiting Professor, University of Agriculture, Abeokuta, October 1995 - March 1996; DAAD Study Visiting Professor, Mathematics Institut der Universitat, Wurzburg, Germany, July 1985 - September 1985; Visiting Professor, Ogun State University, Ogun State, Nigeria, September 1984 - June 1985; Visiting Professor, University of Kentucky, Lexington, USA; Research

Fellow, Institute of Mathematics, University of Warwick, Coventry, England.

Professor Tejumola was Hall Master, Obafemi Awolowo (PG Hall) University of Ibadan from July 1988 to September 1989. He received many honours and distinctions. Among these are: Recipient, University of Ibadan Postgraduate Scholarship Award, 1962 - 1965; Reviewer, The American Mathematical Reviews; External Examiner in many local and foreign Universities; Foundation Editor-in-Chief, Journal of the Nigerian Mathematical Society (1980-2000 with a break of 4 years in-between); Member, Board of Directors, Property Development Corporation of Oyo State, 1984 - 1987; Member, Provisional Council, University of Agriculture, Abeokuta, 1988 - 1989; Fellow of the Nigerian Academy of Science (FAS) elected April 1991; President, Nigerian Mathematical Society (2000 - 2004).

He was a member of many learned societies including the Nigerian Mathematical Society; Mathematics Association of Nigeria; Science Association of Nigeria; London Mathematical Society (reciprocal membership); American Mathematical Society and International Federation of Non-linear Analysts (IFNA).

He will be greatly missed by the Nigerian Mathematical community. May his gentle soul rest in perfect peace (Amen).

Joel C. UKAEGBU²

THE HOT ICON WITH A DIFFERENCE

Among the personalities who in our days have impacted our national University education positively is the diminutive amazon of pervasive influence: Prof. Tejumola. Certainly, so far as this applies to University of Ibadan and Mathematics worldwide, my unflinching convictions and assessment of Professor Tejumola will hardly be disputed. Therefore, my humbler aim in this meager testimony is to bring to fore his celebrated legacies in Redeemers University (RUN) -the place of his last appointment. To dwell, however inadequately, on the glowing qualities of a teacher *par excellence* like Prof. Teju is important if our Universities and teachers charged with accumulation of intellectual capital should have an unaffected feasible contemporary template of discipline and productivity. Though, Prof. Teju spent the greater part of academic sojourn in University of

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Ibadan, I worked with him briefly due to some common interests in lectureship.

Prof. had a good figure and a vigorous disposition while in RUN. Among his various occupations and the wealth of affairs with which his vast and tireless spirit was occupied, he more particularly turned his attention to mathematics, and the excellence was such that death deprived us at a time we needed him most in RUN. His sojourn in RUN covers a period of one academic session. During this time, I observed his eagerness in all areas of his assignments. From the time he came to RUN after leaving Lagos State University in 2011, he infused an understanding of selfless service and demonstrated consciousness to the call of duty. For all who came within the range of his infectious personality, arid professionalism was quickened into exhilarating meaning and the expansion of knowledge and attitude glowed consequently.

It was not merely by courses or lectures that he ignited this deeper understanding, predominantly through informal and unpremeditated talks, mostly in his modest office which gave even the most timid a recharge and refreshment and a sense of exciting adventure. He gave lucid and convincing explanations to many obscurities in mathematics. We all had the pleasure of consulting him at length about some difficulties in research, for such was the admiration of this great mathematician.

A little before his death, Prof. Teju, guided by the principle of coordination of studies realised that the present mathematics curriculum had several deficiencies, which had already been pointed out by others, succeeded in designing a reformed version which will soon be implemented in RUN. Who will deny that Prof. Teju was right in his ardent belief that the faith of the intellectual civilisations of our society is to some considerable extent in the keeping of excellence in our citadels of learning in contrast to ravaging *corruptio optimi* endemic in Nigerian society.

We can present a more detailed discussion of this great man's works and evolution of his thoughts when we have collected together his published writings and perhaps publish the works which are still in manuscripts. Truly, the number of his works, several of them printed, is no less considerable. He published extensively on visible learned journals and consequently became a lawgiver in differential equations. His works bear witness to great knowledge and real genius for mathematics. According to [1], Prof. Teju's

vibrant scholarship, sound judgment and administrative ingenuity made interesting contributions to the development of mathematics.

Prof had a benign and beautiful presence in all our meetings, and lighted dark moments with humour and humility that evoked the wisdom of the taciturn. We learnt from him that greatness cannot be wished into existence, and having accepted the baton of industriousness from this field Marshall and a loaded thinker we cannot fly the flag of mathematics at half-mast in RUN. Though he has no height advantage, his head advantage is our enduring legacy. Now, death where is your sting and victory? You have spelt the name Tejumola backwards, but cannot legislate his memory out of existence. Adieu Prof. The rest is history.

REFERENCES

- [1] E. O. Ayoola, *Mathematics: A Formidable Vehicle For Development*. An Inaugural Lecture, Delivered at the University of Ibadan, Ibadan, Nigeria, 65 - 66, 2011

Victor F. PAYNE³

A TRIBUTE TO A VERY GOOD TEACHER AND A GREAT MATHEMATICIAN

I knew Professor H.O. Tejumola in various capacities, initially as a well-respected teacher many decades ago and later as a senior colleague, friend and good research mentor in the Department of Mathematics, University of Ibadan.

It is noteworthy to remark that Prof. Tejumola initiated my transition from a degree programme in Education to Science in my final undergraduate year. This feat was quite an unlikely precedent in the University. During his tenure in the University of Ibadan, I grew to know and appreciate him as very approachable. He acted as my academic referee on several occasions.

In 1996, when we were both on Fellowship at the Abdus Salam Centre, Trieste, Italy, our relationship blossomed and crystallized into deep friendship. He then introduced me to several areas of research in Differential Equations notable amongst whose works were those of Ezeilo, Mawhin, Ercan Tunc, his other compatriots and

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several others. This was the origin of a number of our collaboration until his passing.

Prof. Tejumola was a very great mathematician who has published several well-researched articles in reputable journals. He had a very strong capacity for hard work and possessed excellent human values and morals. He was a very devout and practising Muslim. It was a pity that death took him away quite suddenly in the twilight of his life when we were still proposing in the Department to continue to drink from his fountain of knowledge.

Alfred O. BOSEDE⁴

ONE OF THE FIRST GENERATION MATHEMATICIANS IN NIGERIA

It is my pleasure and rear privilege to make a very short remark on my experience with late Professor H. O. Tejumola especially when he came to the Department of Mathematics, Lagos State University, Ojo on contract basis between 2008 and 2010. Professor Tejumola was a seasoned Mathematician and an academic per excellence in his chosen field of specialisation.

Professor Tejumola was a guru and an expert in the field of Differential Equations, both Ordinary and Partial Differential Equations, where he excelled and made useful contributions through publications in reputable international journals across the globe.

During his short sojourn in the Department of Mathematics, Lagos State University, Ojo, he was particularly delighted to teach the fundamentals in Analysis and Differential Equations at the Undergraduate level. Most of his favourite courses in Analysis and Differential Equations were usually at the 200 and 300 levels.

Due to his age and experience, both staff and students in the Department of Mathematics, Lagos State University usually referred to him as "BABA" which literally means "Father to All"

BABA (as he was fondly called by all) enjoyed the cooperation and respect of everyone in the Department of Mathematics, Lagos State University throughout his stay.

Professor Tejumola was highly instrumental to the hosting of the 29th Annual National Conference of the Nigerian Mathematical Society (NMS) held at Lagos State University, Ojo between Tuesday July 20 and Friday July 23, 2010. Although, Professor M. O.

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Ajetunmobi was the Chairman, Local Organising Committee, but Professor Tejumola in his characteristic manner acted as the father figure throughout the period of the Conference.

The news of his demise, no doubt came to us as a surprise in the Department of Mathematics, Lagos State University. Obviously, the Department of Mathematics, Lagos State University, Ojo marked his last point of contact with the academic world.

May his gentle soul rest in perfect peace. Amen.

S. A. ILORI⁵

A GREAT MATHEMATICIAN

As a foremost mathematician, Professor Tejumola was a patriarch of Ordinary Differential Equations in Nigeria. As the Chief Editor of the Journal of the Nigerian Mathematical Society in its formative years, Professor Tejumola brought international recognition and respectability to the Journal.

As President of the Nigerian Mathematical Society, Professor Tejumola was unwavering in his deep concern for the development of the Society and its members.

Samuel S. OKOYA⁶

MY CONTACT WITH "HOT"

I met H.O. Tejumola (HOT) for the first time about fifteen years ago during a conference organized by the Department of Mathematics, University of Ibadan, Nigeria for his retirement from active service in 1998. I realised from his citation during the conference that he was a very powerful mathematician.

Our paths crossed when he came to Adekunle Ajasin University (AAU), Akungba, Nigeria on contract appointment and I was the acting Head of Department of Mathematical Sciences while on sabbatical leave in 2004. As destiny will have it, we shared the same flat in the town. During the three semesters that I worked at AAU, he was fond of calling me "my HOD". He was supportive and readily available to discharge his duties.

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Another opportunity came while he served as the President and an ex-official of the Nigerian Mathematical Society (NMS) and I occupied as the Treasurer of the same society. I sat with him in the Council of NMS for five years. Through the years, I believe he enjoyed mathematics and I am most privileged to include his last article in this issue as the Editor-in-Chief of the journal of NMS.

May his soul now rest in peace and we have to keep going. The best we can do is to celebrate him as a successful mathematician since HOT was an achiever who always tried and never gave up. Adieu

Moses A. AKANBI⁷

A RARE GEM AND A ROLE MODEL

Professor Haroon Tejumola is a well - known Mathematician whom I have met at Conferences and other academic functions. But, I knew him at a closer range when he was appointed on contract at the Department of Mathematics, Lagos State University, Ojo, Nigeria. I found him to be disciplined and focused. There is no gainsaying about his dedication to the development and teaching of Mathematics in the country. He was a rare gem and a role model.

E. O. AYOOLA⁸

A TEACHER PER EXCELLENCE

Professor H.O. Tejumola, "HOT" as he was popularly called by students and his colleagues taught me at both the undergraduate and postgraduate levels in Mathematics in Ibadan.

I remember his coming to class punctually and his expert mastery of his subject. His lecture notes were always very comprehensive and detailed. He motivated people like me to take to Mathematics as a profession. He encouraged me to stay on in the subject even when I approached him to sign me out of the Department as the then Head of Mathematics after my preliminary year in 1981.

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He was a father to people like me. Even after his retirement as an active Mathematician, he was regularly visiting us in the Department and attended most Departmental programs. He motivated us by writing excellent reference letters by which we secured employment, fellowship grants and invitation to meetings and seminars. He personally attended my Inaugural Lecture on 8th September, 2011 in Trenchard Hall accompanied by his amiable wife. His words of encouragement at the post-inaugural party in my campus residence will linger on in my memory for a long time.

Adieu HOT, Professor of Professors. Rest in peace.

C. Olu. ABOLUWOYE⁹

A PROFESSOR OF PROFESSORS

Prof. Tejumola taught mathematics at the Adekunle Ajasin University, Akungba Akoko between 2004 and 2008.

Professor Tejumola taught me at the undergraduate days in 1981 at the University of Ibadan. He assisted the department of Mathematics in ensuring full accreditation. Professor Tejumola could be described as Professor of Professors, Teacher of Teachers, prolific writer, renowned author, public intellectual. His intellectual advice helped me to administer the faculty effectively and efficiently.

Prof. Tejumola, to everyone who knows him was a highly cerebral man. He was somebody that you would want to be with, because you would learn a lot from him. He was a man that plans well and has scientific approach to issues.

May Allah grant him eternal rest.

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