



**Professor Ernest Hinton (1946 – 1999)**

M.Sc., Ph.D., D.Sc., C.Eng., M.I.Struct.E., M.B.C.S.

# **Obituary in Engineering Computations**

## **International Journal for Computer-Aided Engineering & Software**

### **Professor Ernest Hinton**

Professor Ernest Hinton died on Thursday 18<sup>th</sup> November. He was with the Department of Civil Engineering at the University of Wales Swansea for over 30 years.

Ernie was born in Liverpool in the Spring of 1946; a fact that earned him the reputation of being a VE (Victory in Europe) baby. He grew up in Liverpool and apparently spent quite some time at the dog racing tracks earning some money as a helper. Ernie left Liverpool at the same time as The Beatles and as he often pointed out: “Look what became of them and look what became of me!”

From Liverpool he moved to Swansea where he went through a ‘normal’, highly successful academic career and in 1989 he was awarded a personal chair in recognition of his world class research. In Swansea he met Margaret, the “best wife in the world” as he often described her. They married and had two sons, William and Edward.

From his Liverpool days he inherited his love for football. He was a keen supporter of Everton FC and naturally he could not resist telling the story about how many football clubs there were in Liverpool: Tranmere, Everton and Everton Reserves! He liked to quote Everton FC’s motto ‘Nil Satis – Nisi Optimum’ - nothing is satisfactory unless it is the best – to summarize the objectives of his research into structural topology and shape optimisation over the last ten years, but it applied equally to the spirit in which he did all his work.

Ernie was a very important part of the pioneering team at Swansea that made it the home of Computational Mechanics in Europe and the World. His personal contribution to this success at Swansea was considerable. His early textbooks, co-authored with Roger Owen, are essential reading material for students around the world and became benchmarks for later treatises on Finite Elements. His legacy will always be remembered by future generations of researchers, and by the many present students who have benefited from his research work.

The MSc and PhD students who were supervised by Ernie benefited from his seemingly infinite motivation and inspiration. In Germany a PhD supervisor is called ‘Doktorvater’ which translates into ‘PhD father’. This description fits Ernie extremely well, since he not only supervised his students but additionally was a mentor for them, guiding them through that important part of their lives. He also spent a tremendous amount of energy on lecturing at both the undergraduate and postgraduate level and students appreciated his efforts to explain difficult subjects in understandable form. His door was always open, and anybody who wanted help with a difficult subject, or with other problems was always welcome. Despite his personal fight with illness he had lots of time and encouragement for the people around him.

Whenever one sat down with Ernie, he started interesting conversations. His mind seemed to be restless in gathering and digesting information, and suddenly a new idea evolved. Ernie had a natural thirst for knowledge and this translated into his work. Whenever he went on one of his many journeys to all parts of the world, he came back with new books and new ideas for research. He simply loved researching new topics and opening up new fields.

The news of Ernie's death has had a major impact on his many colleagues in Swansea and internationally. Ernie was an academic, a researcher, and a highly respected and well loved individual, who can best be described as 'a scholar and a gentleman having quality and integrity'.

His colleagues will remember his many contributions but will, in addition, recall a courageous man with a Liverpoolian sense of humour and keen intellect. Ernie liked to play with words and to tell humorous stories, such as: "It is night and a policeman sees a drunk on the ground in the light of a street lamp, seemingly looking for something. When asked what he was doing the man answered that he was looking for his keys. Whereupon the policeman asked him where he had lost his keys. The man replied that he had not actually lost them here, but somewhere over there in the dark; however, it is was a lot easier to look for them in the light of the street lamp." Ernie re-phrased the lesson from this story in one sentence: 'If you want to go there, I would not start from here.'

He will be greatly missed. A great man.

Hans  
(Johann Sienz)

Swansea, December 21, 1999

## **Departmental Obituary**

### **Professor Ernest Hinton**

Professor Ernest Hinton died on Thursday 18<sup>th</sup> November after fighting a valiant battle against his illness. He was with the Department of Civil Engineering for over 30 years.

Ernie graduated in Swansea in 1967 and proceeded to gain a PhD under the supervision of Professor John Davies. He was appointed to the academic staff of Civil Engineering at University of Wales Swansea in 1974 and received a DSc from the University of Wales in 1988. He was awarded a Personal Chair in 1989. His research concentrated on the finite element method, in particular, related to structural mechanics and optimisation. He co-authored 9 textbooks and over 200 scientific publications, and he co-edited 2 international journals. He was a major figure in the international Computational Mechanics community, acting as editor to several leading academic journals, chairman of several national committees on finite elements and a member of the EPSRC College on Design and Integrated Production.

Ernie's work in research earned him an outstanding reputation on the international level. Numerous generations of students benefited from his research work. The MSc and PhD students who were supervised by Ernie benefited from seemingly infinite motivation and inspiration. Ernie also spent a tremendous amount of energy on lecturing students on both the undergraduate and the postgraduate level. The students appreciated his efforts to explain difficult subjects in understandable form. And when the lectures were not quite enough his door was always open to the students and anybody else who wanted to ask him about a difficult subject area or come to him with other problems. Despite his personal fight he had lots of time and encouragement for the people around him. Whenever one sat down with Ernie, he started interesting conversations. His mind seemed to be restless in gathering and 'digesting' information and suddenly a new idea evolved.

The news of Ernie's death has had a major impact on his many colleagues inside and outside Swansea and tributes to him, as an academic, researcher, and a respected individual, have been received. A recurring comment has been to describe Ernie as 'a scholar and a gentleman' who 'had quality and integrity'. He was a quiet man with inner strength who fought his private battle with cancer with enormous courage and dignity.

A distinguished UK academic has written this week 'Ernie was part of the pioneering team at Swansea that made it the home of computational mechanics in Europe'. His personal contribution to this success at Swansea was considerable. His legacy will be remembered by future generations of researchers. His colleagues will remember his many contributions but will, in addition, recall a courageous man with a Liverpoolian wit and keen intellect. He will be greatly missed. One of his many sayings was: 'If you want to go there, I would not start from here.'

## **Article in the South Wales Evening Post, Friday, November 26, 1999**

### **Respected Lecturer Loses Cancer Battle**

A much-liked and respected Swansea University professor has lost his battle against cancer.

Ernest Hinton died at Morriston Hospital after a long fight against the disease.

His funeral will be held today.

Professor Hinton's death has had a major impact on his colleagues within and beyond Swansea. Numerous tributes have been paid to a man described as a scholar and a gentleman.

A Mayals Avenue resident, Professor Hinton came to Swansea from Liverpool as a student in the 1960s and fell in love with the area.

He graduated from the University in 1967 and, after taking his doctorate, went on to work in the department of Civil Engineering for 30 years.

Known as Ern to his friends, Professor Hinton had an outstanding reputation at a local and international level for both his lecturing and research skills.

He co-authored ten textbooks and more than 200 scientific publications.

He was also co-editor of two international journals.

Professor Hinton was an important figure in the international computational mechanics community, chairing several committees, and was a member of the national

engineering science research council  
college on design and integrated  
production.

Despite these commitments he also  
dedicated his energy to lecturing  
students at both undergraduate and  
postgraduate level.

He was especially appreciated for his  
efforts to explain difficult subjects in an  
understandable form and his door was  
said always to be open.

A spokeswoman for Swansea  
University said: "The news of Ernie's  
death has had a major impact on his  
many colleagues."

"He was a quiet man with inner  
strength who fought his private battle  
against cancer with enormous courage  
and dignity."

"His colleagues will remember his  
many contributions to research but will,  
in addition, recall a courageous man  
with a Liverpudlian wit and keen  
intellect."

"He will be greatly missed."

Professor Hinton leaves a wife,  
Margaret, and sons, William and  
Edward

## **Short CV of Prof. Ernest Hinton**

NAME: Ernest HINTON.

DATE OF BIRTH: 19th. March 1946.

### **ACADEMIC QUALIFICATIONS:**

- (a) B.Sc. Honours (Wales) 1967,
- (b) M.Sc. (Wales) 1968,
- (c) Ph.D. (Wales) 1971 Design of RC slabs, and
- (d) D.Sc. (Wales) 1988

### **PROFESSIONAL QUALIFICATIONS:**

- (a) C. Eng.,
- (b) M.I.Struct.E. and
- (c) M.B.C.S.

### **APPOINTMENTS:**

- (a) 1971 Research Assistant (University of Wales Swansea),
- (b) 1974 Lecturer,
- (c) 1982 Senior Lecturer,
- (d) 1986 Reader, and
- (e) 1989 Professor.

### **ACTIVITIES:**

- (a) Co-author of 9 textbooks,
- (b) Co-author of 200 scientific publications,
- (c) Joint Editor of 7 scientific monographs on Computational Mechanics,
- (d) Joint Editor of 'Engineering Computations', An International Journal for Computer-Aided Engineering, and 'Design Optimization', Product and Process Improvement,
- (e) Co-organiser of 10 International Conferences on Computational Mechanics in Engineering,
- (f) Chairman of Research Working Group of NAFEMS (National Agency for Finite Methods and Standards),
- (g) Member of Steering Group and other NAFEMS Working Group on Nonlinear Problems,
- (h) Leader of ADOPT Research Group at Swansea,
- (i) Co-Leader of the PolySim Research Group at Swansea, and
- (j) Member of EPSRC College on Design and Integrated Production.

### **ADMINISTRATION (UWS)**

- (a) Chairman Postgraduate Affairs Committee,

- (b) Chairman M.Sc. Subject Panel,
- (c) Member Strategic Planning Committee,
- (d) Member Maths. and Computing Subject Panel,
- (e) Library Liaison and
- (f) Student Demonstrators

**TEACHING DUTIES (UWS):**

- (a) Finite Elements Undergraduate,
- (b) Civil Engineering Materials Undergraduate,
- (c) Finite Elements M.Sc. and
- (d) Optimization M.Sc.

**Worldwide Responses to Ernie's Death**  
(in arbitrary order)

**Prof. R.W. Lewis, UK:**

Gentlemen,

It is with great sadness that I write to inform you of the death of my friend and colleague Professor Ernest Hinton.

Ernie fought a valiant battle against cancer for over ten years but yesterday died quietly in his sleep. He will be greatly missed, not only in Swansea but everywhere he went where his charm and Liverpudlian humour endeared him to all.

In due course I hope that Roger Owen, who co-authored many books with Ernie , will write an obituary for IJNME. I'm sure this will have your blessing.

Roland

**Prof. J.R. Hughes, USA:**

Dear Mrs. Hinton,

I was deeply saddened to hear that Ernie passed away. Ernie was one of the true gentlemen in our profession. I enjoyed spending time with him at many conferences that we attended over the years. Despite his significant academic accomplishments, he was always kind to everyone and retained a sense of humility. These characteristics are not always shared by successful individuals in a competitive endeavor such as ours.

The day after I was informed of Ernie's passing, I was lecturing to my class when I realized I was presenting something that Ernie had educated me about years ago. It was difficult continuing. As far as I know Ernie's

observations on this matter were never written down. I am hoping to contribute something on this dedicated to his memory.

My condolences to you and your family.

Sincerely,  
Thomas J.R.

**Mr. J.B.M. de Sousa Junior, Brazil:**

Hi Hans.

I received your e-mail about Prof. Hinton. I just never know what to say on these occasions. I will ever be grateful for having had the opportunity to work with him. I'm looking forward to see you in Brazil next year.

All the best,  
JB

**Prof S.K. Thakkar, India:**

Dear Mrs. Hinton,

I was shocked to receive the message of sad demise of Prof. Ernest Hinton. I had received the message through Dr. K. G.Sharma of IIT, Delhi. I had known him since a long time as a brilliant researcher. I have read many of his papers and his books. I had association with him during my stay at Swansea during 1975-1977 and further in 1984. He was a decent person with many qualities. Please accept my heartfelt condolences on his demise and I pray that God gives you enough strength to bear this loss. Prof. G.C.Nayak at Roorkee has also conveyed through me his condolences to you and members of his family. With best regards, Yours Sincerely, S.K.Thakkar

**Prof. P. Marovic, Hungary:**

Dear Ms Anne,

Thank you very much for sending me a sad notice that Professor Ernest Hinton passed away.

Please, express my deepest condolence to the family and the friends, not only in my name but also in the name of the other members of the Faculty of Civil Engineering of the University of Split.

Unfortunately, we are not in position to come at the funeral and service.

Prof. Pavao Marovic



**Prof. N.V.R. Rao, India:**

Dear Hans,

It is with great regret I note the death of Prof. Hinton. I came to know just today as my computer system had some problems and I had difficulty accessing my e-mail. I and my family members are extremely sad and grief stricken with the news. Please convey our condolences to the bereaved family. Loss caused by his absence cannot be expressed in words. Truly he was a father figure to me as well. I hope we will continue with the book project he started as a tribute to him.

Please keep in touch.

Regards  
Rao

**Dr. A. Usmani, UK:**

Dear Roland,

Hope you are well.

I heard about Ernie's passing away yesterday from an acquaintance.

Very sad news, he was such a lovely man. I didn't really know anyone in his Family but I felt that I must pass my condolences on to the Department to acknowledge his service to the FE community and his humanity. Perhaps it would be a good idea for someone to put a news item on the Civil Eng web pages.

Best regards  
Asif

**Prof. V.V. Toropov, UK:**

Dear colleagues,

There is a very sad reason for this joint circular to the Members and Foreign Friends of ASMO UK (Association for Structural and Multidisciplinary Optimization in the UK); and also to the members of the EDO-NET (EPSRC Engineering Design Optimization Network).

Professor Ernest Hinton, the Chairman of ASMO UK and Co-Chair of EDO-NET, died on Thursday, 18 November.

For the second time he was fighting cancer but, to our greatest regret and sadness, this time he lost his fight.

The funeral is on Friday, 26 November at Brunswick Methodist Church, St Helen's Road, Swansea.

Ernie was a close friend of mine, and we did (and planned many more) things together, including the organisation of ASMO UK and launching the journal of Design Optimization. All of us knew him as a truly exceptional scientist and engineer, but also he was a very caring and supportive person. Just to give you a glimpse of his personality, I attach his response to my email in which I apologised for being slow with certain things we did together.

I hope that you agree with me that, as our tribute to Ernie, we shall try to make ASMO UK and EDO-NET successful and useful to the design optimization community, as he always wanted.

I am sure that all of you would want to join me in extending our heartfelt sympathy to Ernie's wife Margaret and to their sons William and Edward.

Vassili Toropov  
Secretary of ASMO UK

=====  
Email of Wed, 20 May 1998 from Ernest Hinton

I was always quoted the fable of the tortoise and the hare when I was at junior school. In fact I had a school report which stated that I worked well but I sometimes was too hasty and that I should 'remember the tortoise'. Later in life I re-interpreted this as: keep your head down (i.e. out of the firing line), develop a thick skin (i.e. don't be too sensitive to criticism) and most importantly take your time - thing's have a habit of turning out for the best if you take your time.

So don't worry about being 'slow'.

Regards,

Ernie

=====

**Prof. T. Belytschko, USA:**

Roland:

Sorry to hear about Ernie Hinton's death. We thought he had conquered the disease, but I guess it was not to be. It's a sad day. I think an obituary in IJNME would be very appropriate-he made many important contributions to the field.

Regards  
Ted

**Prof. R. de Borst, The Netherlands:**

Dear Roland,

I have heard from various sides about Ernie's passing away. I liked him very much and dealt with his illness in a very courageous manner. I hope that an obituary by Roger can be published as soon as possible.

Best regards,

Rene

**Dr. D. Thompson, UK:**

Dear Vassili,

Thank you for informing me about Ernie Hinton even though it came as a shock. I only met Ernie three times and each time was a an enjoyable experience. You could not fail to like the man. I will always remember him from his session as chairman at the Ilkley conference when he introduced every body with a small anecdote linked with him travelling around to various parts of the country. This instantly put all the participants at ease.

The Finite Element world is going to miss him. Please can you convey my condolences to his family and also to yourself. You two were quite a team together I hope you can find some one to follow in his style.

Regards

Dave Thompson

**Prof. V.V. Toropov, UK:**

Dear Hans,

I have collected the messages from several people who responded on my e-mail informing that Ernie passed away.

People knew him as a truly exceptional scientist and engineer, but also he was a very caring and supportive person.

Vassili

**Prof. B Karihaloo, UK:**

Dear Vassili

I'm so shocked that I don't know what to say. I didn't know that he was seriously ill. He was in great spirits when I last saw him in Ilkley. I'll always remember him that way.

Do you know anything about the funeral? I guess you plan to attend. I would like to do so, if it doesn't clash with my prior commitment. I'm going to Hamburg on Monday and returning during the night on Wednesday. Could you please let me know as and when you find out about the funeral.

We will have to bear his loss which is indeed great.

Bhushan

**Prof. Fred van Keulen, The Netherlands:**

Vassili,

I was hoping that he could enjoy life longer. A very nice person passed away.

Fred van Keulen

**Prof. G. Vanderplaats, USA:**

Dear Vassili:

I was indeed saddened to hear the news of Ernie's passing. His contributions have been great and will honor his memory well.

Garret N. (Gary) Vanderplaats

**Prof. M.P. Saka, Bahrain:**

Dear Dr. Toropov,

I am completely shocked and saddened when I read your e-mail regarding the death of Professor Ernest Hinton. The memories we had here in Bahrain when he visited us as an external examiner for the thesis of one of my MSc student is as fresh as yesterday. I will find it difficult to realize that he will be not with us anymore. I have met quite a lot of academicians all around the world. He was one of those who is capable but in the same time quite a humble person. His loss will certainly be felt for a long time in the field of structural engineering. We certainly work harder than before to make DO as successful as he always wanted. Please kindly extend my condolences and sympathy to his widow Margaret and to his sons.

Regards,

m.p.saka

**Prof. H. Eschenauer, Germany:**

Dear Vassili,

With great sadness I have received your e-mail in which you inform me about the death of our colleague and friend Ernie Hinton. It was indeed a shock for me as it certainly was for all his numerous other friends and colleagues. I would kindly ask you to confer my sincere condolences to his family. Naturally, I also send you my sympathy as I now that you have lost a dear friend with whom you have been closely cooperating for many years.

At the moment I am preparing a paper for Applied Mechanics Reviews together with Niels Olhoff. This paper is to appear next year. In this context, I would like to suggest that Niels and I dedicate this contribution in memoriam of Ernie as a sign of our sympathy. I hope that you can agree to this proposal. I will talk to Niels in this matter as soon as I have your reply.

Finally, could you possibly send me the address of Ernie's family so that I can express my condolences to his wife and sons personally.

I am looking forward to hearing from you again soon

With best regards.

Hans  
Univ.-Prof. Dr.-Ing. Hans A. Eschenauer

**Dr. K.G. Bhatia, USA:**

I am sorry to hear about Prof. Hinton's death. Even though I did not have the pleasure of knowing him as you did, I feel sorry for the loss to his loved ones. My condolences to his family and friends. Thanks for sharing the sad news with us.

Kumar G. Bhatia

**Prof. A. Morris, UK:**

Vassili,

Thank you for letting me know the tragic news of Ernie's death. I am personally touched by his death as I have known him for a very long time. I had the highest regard for him, he was always kind and considerate with a lovely quite sense of humor. In thinking about a phrase which would sum him up, as I knew him, the old

fashioned phrase "a Scholar and a Gentleman" fits perfectly. I would be grateful if you would pass on my genuine and deep condolences to his wife and family.

Alan.

**Prof. E. Vaz, Brazil:**

Dear Vassili,

I am totally shocked with the tragic news of Ernie's death. During my sabbatical year in Swansea I learned to admire him both as a researcher and as a man. I off course join you in extending our sympathy to Ernie's widow.

Luiz Eloy.

**Prof. P. Morelle, France:**

Dear Vassili

I thank you for letting us now such a tragic information. I join you in those deep regrets that Prof Hinton will not be there anymore to work with us. And I totally agree with your project: let us make the Journal successful in his Memory.

Please transmit all my sympathy to his family.

Patrick Morelle

**Prof. J. Murphy, UK:**

Dear Vassili

I am very sorry to hear this news. Cancer affects so many families and I do wish his family strength through this period.

I like the attached quotation.

Best regards, John

**Prof. J. Rasmussen, Denmark:**

Dear Vassili,

I am both shocked and very sad to hear that Ernie has passed away. He told me a couple of years back about the fight with his disease, but at that time he thought that he had beaten it.

Ernie was quite frankly one of the most pleasant and interesting persons in the optimization society, and I valued his company very highly whenever I had a chance to meet him at various places around the world. He had this strange charisma that quite simply made him an interesting guy to be with.

Vassili, I would be most grateful if your would convey my sincere condolences to Ernie's family. I shall miss him a lot.

John

**Prof. M. Kleiber, Poland:**

Most deeply saddened by your shocking message I join, on behalf of my own and very many colleagues in my country, the family and friends of Ernie to share your great pain and sorrow. We lost a truly exceptional person and a great researcher - my recollections of him will stay with me forever.

Michael Kleiber

**Prof. A. Kaveh, Iran:**

Dear Professor Toropov,

Sad news. I am shocked. We lost a great man. Please accept my sincere condolence.

Would you kindly reveal my sincere condolence to his family. I am sure you agree with me that we should keep his name alive.

Best regards,

Ali Kaveh

**Prof. G. Maier, Italy:**

Dear Vassili,

the sad news that Ernest Hinton passed away brings deep sorrow to me and, I am sure, to all my colleagues whom I will immediately inform. Ernie visited us many years ago and we have excellent memories of His lectures here and of His stay with us. Of course we all know with deep esteem His many scientific achievements in computational mechanics. Please, bring our condolences to His wife and sons. I will circulate the sad news of His death among colleagues and friends through e-mail using your message and His quotation contained in it, if you permit me to do so (please let me know soon if you don't like this use of your message).

Kindest regards,

Giulio

**Prof. G. Cheng, China:**

Dear Prof.Toropov,  
I am deeply shocked by the sad news about Prof.Hinton's death.  
Please give his family my deepest sympathy.

from  
Gengdong Cheng

**Dr. S.M. Bastos, Brazil:**

Hi Hans,

I was out of the college because Julia was a bit sick and I only read your message now. I am really in shock and very sad and sorry  
God bless everybody and give a big support to all of you in the department.

I will phone to you sometime next week,

Silvana

**Dr. S.J. Lee, Korea:**

Hans,  
I have heard a sad news from Swansea. I could not believe the news. I am deeply saddened by his death. Could you please tell me the situation there?

Regards,

Jin, Korea

**Dr. N. Knowles, UK:**

Dear Hans,

Thank you for your email. In fact I had already learned the sad news. I guess the speed with which it circulated is an indication of the enormous respect that Ernie commanded.

As you say, the FE community has lost a great scholar and an inspiration to many. We have also lost a thoroughly decent man who I greatly admired.

I have written to Roger Owen on behalf of the NAFEMS NLWG asking that he passes on our sympathies to Ernie's wife and family. Of course I extend them to you and all his colleagues.

Regards



Nigel Knowles

**Dr. S. Campion, Ireland/USA:**

Hans,

I'm terribly sorry to hear that news. He was a kind man.

I left you a voicemail at work. I also rang your house. Please let me know the funeral arrangements as soon as they are known - I'm hunting for some flights out of here. I'd like to attend if its at all possible. So far, nothing has popped up. I'd appreciate it if you could email me or even phone me to let me know what exactly is going on. My number here is 612-494-2571. Please pass on my sincere condolences to Margaret.

Kind regards,

Simon

**Prof. M. Özakça, Turkey:**

Dear Friends

I could not find word to tell my feelings. I am very sad. I am sharing your feeling. Prof. Dr. E. Hinton is excellent man, good friend, very kind person, great researcher,...

I am sorry that I could not do anything for him. when I receive a e-mail from him after 6 year I start to shake because of happiness. I found him again but now we lost him forever but He will live in our hearts.

Regards

Mustafa Özakça

**Mr. C.E.K. da Silva, Brazil:**

Hi Hans

Actually I don't know what to say. I just got the message and I'm really sad about the unfortunate new. I admired him a lot as a person and as a professional. Only special persons can face such a serious disease living on as everything is going fine. He's not with us anymore but he can be sure he left this world knowing that he did a great job. His family knows that. I'd ask you to pass on to his wife and sons my sympathies.

Carlos

**Prof. M. Cross, UK:**

Nigel,  
thanks for the email below - I am very sad to hear of Ernie's death. Of course, I was aware of his battle against cancer and the fortitude he showed in the face of a very difficult time. Please pass on my condolences to his family and also his colleagues. He was part of the pioneering team at Swansea that made it the founding home of computational mechanics in Europe - he will certainly be missed by the CM community. Although I didn't know Ernie as well as some others at Swansea, I certainly both liked and respected him and his work over a 30 year career. I am very sorry to hear this news and will certainly explain the context to colleagues on Friday.  
Kind Regards,  
Mark

**Prof. G. Belingradi, Italy:**

Dear Prof. Owen

Yesterday I had from Eugenio Onate the sad news of Ernie death.

I wish to express to you, who was one of his best friends, and through you to his family and his friends there in Swansea, my cordial participation in this very sad event.

I had the occasion of meet Ernie in 1984 when I was in Swansea and since that time I had the fortune of meeting him a number of times, every occasion was a good occasion to learn something new from him and in the same time every occasion was as to meet a friend.

yours sincerely

Giovanni Belingardi

**Prof. J. Campbell, Ireland:**

Dear Johann,

Thank you for the notice.

I'm deeply shocked and saddened. Ernie was a very good friend over the last thirty years.

Regards John

**Prof. G. Steven, Australia:**

Dear Johann

The sad news has gone all over I've got 20+ e-mails about our loss. He was a great person and a wonderful engineer. I'm so glad I took the chance a month or so ago to send Ernie an e-mail telling him what I felt about his work and what I felt he had given me and our community. I hope he got it.

Anyway it's very sad and he will be missed and can not be replaced. His memory will be with us all. I'm going to be in the UK next year and I hope our paths can cross.

Best wishes Grant

**Prof. G. Steven, Australia:**

Dear Ernie

I was saddened greatly by Osvaldo's report on your health. I know these things can go up and down. I wanted to write now in case things don't go too well. I'll be in the UK next year on Sabbatical. My partner Kay has been appointed to a Chair of Geography in Durham and I'll be there with her and of course Pete Buttress's there so I won't be lonely.

I have admired your work ever since the 70's and I think you are a great model of a scholar who kept quality and integrity in our business at a consistent high.

I hope we get some time together next year. Thanks for all your help and support you are a fine person.

Cheers Grant

**Dr. B. Hassani, Iran:**

Dear Hans,

I feel so sad about the news. As you described Prof. Hinton was a great scholar and an outstanding and dedicated researcher. He had a very productive life. Surely, we will all miss him.

Please accept my sincere sympathy and convey my condolences to his family, especially Margaret, his students and other colleagues and friends in Swansea.

Hope that we will be good followers of his.

Best regards, Behrooz

**Mr. M. Smith, UK:**

We were terribly sorry to receive Vassili's message about Ernie.

John told me about the long struggle he had had. When I met him in Ilkley for the first time, there was no sign of how ill he must have been. It must be a terrible shock and great loss to you and your colleagues. I am sure

you will all be determined to carry on the excellent work he instigated and make a success of it, as Vassili says in his email.

Regards to you and colleagues, Mike

**Dr. N.C. Knowles, UK:**

Dear Roger,

I have just learned the sad news of Ernie's untimely death and write to express my condolences.

I cannot claim to have known Ernie very well, but I valued enormously what contact I did have with him - mainly through NAFEMS. He was always so very approachable, with a fund of useful ideas and advice which he contributed so selflessly with little regard to his own benefit. Of course he made a huge contribution to the FE community and to NAFEMS, but those of us who were fortunate enough to meet him regularly will probably value him more for his friendship and straightforward decency. We all admired the fortitude he showed in coping with his illness.

Please pass on my sympathies and those of the NAFEMS Non-linear Working Group, to his wife and family.

Yours sincerely

Dr N C Knowles

**Dr. A. Selman, The Netherlands:**

Dear Mrs Hinton

I Just heard the sad news, I am terribly sorry. I have been Prof Hinton's student for over five years. I always kept, and will keep a wonderful souvenir of the time I spent with him.

Please accept my sincere condolences.

Ahmed Selman (A former student)

**Prof. G. Rozvany, Germany/Hungary:**

Dear Vassili,

I am shocked and dismayed by the tragic news. I just cannot believe it. Sharing fully your sorrow,

George

**Prof. M. Özakça, Turkey:**

Dear Prof. Weatherill,

I was deeply grieved to learn the passing of my esteemed advisor Prof. Ernest Hinton. The loss to us is great. All who knew him well remember his many kindness' and friendship. Please convey our sympathy also to his family. Could you forward the attached letter to his family.

Yours Sincerely,

Mustafa Özakça

**Prof. B. Topping, UK:**

Dear Nigel,

I was very sorry to hear about Ernie Hinton. He was a very kind and generous person to me. I remember when I was getting in one of stressed periods reminding me "to sniff the flowers along the way".

I would like to contribute to any fund you may establish to remember him by.

He was on the Editorial Board of both Computers & Structures and Advances in Engineering Software. We would like to publish (re-publish) an appreciation if anyone has written one for him.

Regards,

Barry

**Prof. E. Salonen, Finland:**

Dear Prof. N. Weatherill,

Thank you for informing me about the death of Professor Ernest Hinton. I knew him from my stays in Swansea during 1972 and 1977. In the latter occasion I had the privilege to do some research with him. I will always remember him as a humble, kind and honest person. Attached is a message of condolence to his family. I thank once more for offering me in this way the possibility to take part in the sorrow.

Yours Sincerely,

Eero-Matti Salonen

**Prof. M.M Saadatpour, Iran,  
Dr. B. Boroomand, Iran,  
Dr. B. Koosha, Iran:**

Dear Prof. Weatherill,

On hearing the sad news regarding the death of Professor Hinton, we hereby express our feeling of deep sorrow to his friends and family. Let us share with you the grief and mourning of the loss of him. With no doubt this sad event has been an immense shock to the engineering community in the world. Please accept our condolences.

Our condolences also go to Professor Hinton's family, so please convey to them our message in this regard. Thank you.

Yours Sincerely,  
M.M. Saadatpur, B. Boroomand, B. Koosha

**Prof. J. Parker, UK:**

On behalf of all the staff in the Department of Materials Engineering, I write to express our sadness at the news of the sudden death of Ernie Hinton. Please pass our condolences to his wife and family.

Jonathan Parker

**Prof. S.K. Thakkar, India:**

I feel very sorry on the passing away of Prof. Hinton. I realise that it is a great loss for the Department and to the people who have been working in Finite Elements and related areas of applications.

S.K. Thakkar

**Prof. J. R. Williams, USA:**

I was deeply saddened to hear the news of Ernie's death. As one of the early students at Swansea I benefited greatly from his teaching and research. Although he was a top class scholar he wore his learning lightly. Many is the hour that I sat with him and his students, Tony Fawlkes and Brian Duncan, drinking coffee on the way back from the Computer Centre. Of course, this was the old days when computing involved carrying boxes of cards back and forth and output was still printed on reams of paper.

For me Ernie will always be associated with my best memories of Swansea University. He will be sadly missed but not forgotten by the many students, like myself, whose lives he touched.

John

**Prof. C.V. Ramakrishnan, India:**

Dear Prof. Weatherill,

I and my wife Nimmy have been overcome with grief with the news of Ernie Hinton's sad demise. I am aware of the brave manner he bore with his illness. Having been associated very closely with him both professionally and personally it has been a great loss. I shall appreciate if the following message is conveyed to his family.

"I met Ernie during my first visit in 1972 when he also joined the faculty. Since that time I have been constantly in touch with him and been in close contact during my visits to Swansea. In fact I was at Swansea using his office during one of my visits when he was diagnosed of his illness. I was so shell shocked that I found very few words to exchange with him when he joined duty. His contributions to knowledge during the long illness have been immense and he is a shining example of bravery. May his soul rest in peace."

I am deeply touched by your gesture of communicating this news immediately.

With regards,

C.V. Ramakrishnan.

**Prof. D. Dawe, UK:**

Dear Nigel,

I was very saddened to hear on Monday from Richard Wood of the death of Ernie Hinton. We all know that Ernie had a very major battle with illness for the past decade or so, and hence it should not have been completely unexpected. Nevertheless, when it actually happens it is still a shock, particularly since he usually appeared to be well and energetic on the occasions that I met him. It is a great shame that he suffered so much over a prolonged period and that he has died at a relatively early age.

Ernie was a remarkable man. He was obviously very productive in his academic career, especially in the areas of research and publication, and was a very well known and much respected figure in the world of finite elements. His books and papers were always of high quality and covered a wide range of topics. What is particularly remarkable is that his productivity did not diminish during the years of his illness; in fact, it seemed to increase. Many people would have given up the ghost in his circumstances but it says much for Ernie's strength of character and his enthusiasm that he carried on with unabated vigour in his work.

I first met Ernie at a CANCAM conference in Vancouver in the late seventies. I have fond memories of that, with two other delegates from the UK, we had a very enjoyable time, as a British quartet, in the social and free-time aspects of the conference. Ernie was always a very pleasant man to meet and to talk to, with a nice sense of humour. At different times we were able to help each other in aspects of career development. He was a man of whom I thought highly and liked very much, and I will miss his presence in the future.

I have no doubt that the loss of Ernie will be felt greatly by your Department, from the points of view of his qualities as a very fine human being and for his major technical contributions. His shoes will indeed be extremely difficult to fill.

He will, of course, also be missed hugely by his family. I never met his wife or any other family member but perhaps you would pass on to the family my deepest sympathy for their loss. If you feel it to be appropriate, I would be happy for you to copy this letter to Ernie's widow as an expression of my condolences. I regret that I cannot attend the service tomorrow because of other commitments, but my thoughts will be with you all at the time of the service.

With kind regards,

Don Dawe

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Many other distinguished researchers expressed their sadness at Ernie's death and sent their sincerest condolences.

## **Selected Publications:**

Hinton E. and Campbell J. Local and global smoothing of discontinuous finite element function using a least squares method. *Int. J. Numer. Meth. Eng.*, 8:461–480, 1974.

Hinton, E., Razzaque, A., Zienkiewicz, O. C. and Davies, J. D. (1975), "A simple finite element solution for plates of homogenous, sandwich and cellular construction", *Proceedings of the Institution of Civil Engineers*, 59, p. 43-65

E. Hinton (University College, Swansea, Wales, U.K.), "Buckling of initially stressed mindlin plates using a finite strip method", *Computers & Structures*, Vol. 8, No. 1, February 1978, pp. 99-105, doi:10.1016/0045-7949(78)90164-5

**ABSTRACT:** The buckling of initially stressed Mindlin plates is considered using a thick finite strip method. The method is compared with a wide variety of published results and for both thin and moderately thick plates excellent accuracy is obtained. Some further results are obtained for initially stressed rectangular plates with two opposite edges simply supported and various support conditions on the remaining sides. In general, it is found that for moderately thick plates, Mindlin's plate theory gives lower buckling loads than those obtained using classical thin plate theory.

Oñate, E., Hinton, E., and Glover, N. (1979). Techniques for improving the performance of isoparametric shell elements. In Brebbia, C. and E. Alarcón, editors, *Applied Numerical Modelling*. Pentch Press.

Hinton, E., Owen, D.R.J., 1979, *An introduction to Finite Element Computation*, Pineridge Press Limited, Swansea, U K

*Analysis and optimization of prismatic and axisymmetric shell structures: theory, practice, and software*, by Ernest Hinton, Johann Sienz, Mustafa Özakça



**ABSTRACT:** Shell-type structures can be found almost everywhere. They appear in natural forms but also as man-made, load-bearing components in diverse engineering systems. Mankind has struggled to replicate nature's optimization of such structures but using modern computational tools it is now possible to analyse, design and optimise them systematically. Analysis and Optimization of Prismatic and Axisymmetric Shell Structures features: comprehensive coverage of the background theory of shell structures; development and implementation of reliable, creative and efficient computational tools for static and free-vibration analysis and structural optimization of variable-thickness shells and folded-plate structures; integrated computer-aided curve and surface modelling tools and automatic mesh generation, structural analysis sensitivity analysis and mathematical programming methods; CD-ROM containing well-documented Fortran software for these techniques using finite element and finite strip simulations which can be readily adapted by the reader for the solution of practical problems or for use within a teaching or research environment. Written by leading experts in finite element and finite strip methods, Analysis and Optimization of Prismatic and Axisymmetric Shell Structures will be of great interest to researchers in structural mechanics and in automotive, aerospace and civil engineering as well as to designers from all fields using shell structures for their strength-per-unit-mass advantages.

**Keywords »** Optimization - axisymmetric shells - finite element analysis - finite strip analysis - prismatic shells  
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Hinton, E. and Owen, D. R. J. (eds): Finite Element Software for Plates and Shells, Pineridge Press, Swansea, UK 1984

Hinton, E. (ed): Numerical Methods and Software for Dynamic Analysis of Plates and Shells, Pineridge Press, Swansea, UK 1987

Selman, A., Hinton, E. and Atamaz-Sibai, W., Edge effects in Mindlin-Reissner plates using adaptive mesh refinement, Eng. Comput., 7, p. 217-226, 1990

NAFEMS (1992): "Introduction to Nonlinear Finite Element Analysis", edited by E. Hinton, Bell and Bain Ltd., ISBN 1-874376-00.

Selman, A. and Hinton, E., Two dimensional transient dynamic analysis with adaptive mesh refinement, Comm. Num. Meth. Eng., 9, p. 825-836, 1993.

E. Hinton, N.V.R. Rao and M. Özakça (Department of Civil Engineering, University College of Swansea, Singleton Park, Swansea, SA28PP, U.K.), "Structural optimisation of axisymmetric and prismatic shells and folded plates", Computing Systems in Engineering, Vol. 5, No. 2, April 1994, pp. 179-191  
doi:10.1016/0956-0521(94)90049-3

**ABSTRACT:** This paper deals with the development and application of reliable, creative and efficient computational tools for the structural optimisation of variable thickness axisymmetric and prismatic shells and folded plates using computer-aided analysis and design procedure. The problem of finding optimal forms and thickness variations for such structures is solved by integrating computer aided geometry modelling tools, automatic mesh generation, structural analysis, sensitivity evaluation and mathematical programming methods. The shape and thickness variation of the structures are defined using parametric cubic splines and the structural analysis is carried out with either finite element or finite strip methods in which Mindlin-Reissner assumptions are adopted. In static situations, the composition of the strain energy is monitored during the optimisation process to obtain insight into the energy distribution for the optimum structures. This allows us to demonstrate that, in the majority of cases, the optimum shells are membrane energy dominated as might be expected. For the vibrating structures, the mode shapes of the initial and optimum solutions are presented. A set of carefully defined, unambiguous benchmark examples is presented and studied with independent verification to test the various features of the structural optimisation process.

Hinton E., Özakça M., Rao N.V.R., 1995, Free vibration analysis and shape optimization of variable thickness plates, prismatic folded plates and curved shells, part 1: finite strip formulation, *Journal of Sound and Vibration* (1995) 181(4), 553–566

Hinton E., Özakça M., Rao N.V.R., 1995, Free vibration analysis and shape optimization of variable thickness plates, prismatic folded plates and curved shells, part 2: shape optimisation, *Journal of Sound and Vibration* (1995) 181(4), 567–581

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