

**THE ROLE OF KEY ROLE PLAYERS IN SCIENCE COMMUNICATION AT  
SOUTH AFRICAN HIGHER EDUCATION INSTITUTIONS: AN  
EXPLORATORY STUDY**

by

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## Declaration

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I declare that the Doctoral thesis, which I hereby submit for the degree PhD (Communication Management) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree to another university.

Student Details:

October 2004

Give people facts  
and you feed their minds for an hour,  
but awaken their curiosity and they feed their own minds for a lifetime

**Jules Henri Poincaré**

## Acknowledgements

### Declaration

A sincere thank you to all people who in one way or another contributed to the completion of this study.

I declare that the Doctoral thesis, which I hereby submit for the degree PhD (Communication Management) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at another university.

My father, Mr. J. J. Conradie, gave me the courage and perseverance to successfully complete this study. He carried me through every day with His power and grace and this study is certainly one of the largest gifts of grace that I have ever received through His hand.

My supervisor and mentor, Prof Anské Giebler, who provided continuous support, advice and encouragement. She has helped with regular encouragement, many hours and unbelievable patience to offer the necessary leadership. Through her positiveness and trouble I was able to complete

**Elsabé Conradie** successfully

my husband, Daan, for his assistance and support throughout the study. Thank you that you always understood, since only your encouragement and numerous sacrifices carried me through difficult times. Thank you for your love and support every day of my life.

My children who had to keep quiet so many days and nights, because "Mamma moet werk". Your sacrifices, obedience and comprehension did not pass unseeing and I appreciate your love sincerely.

My wonderful parents who were never too busy to help out with the children, who always show interest in my studies and who gave me the opportunities to reach my goals. Thank you that you never complained about my anti-social behaviour, but always understood my situation.

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Colleagues and friends for their encouragement and support.

I dedicate this dissertation to Daan, my children and my parents and thank them for their continuous love and understanding.

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A special thank you to:

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## Abstract

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South Africa, as a developing country, depends on science and technology to support industries to reach informed decisions and be competitive in the international marketplace. However, most people cannot distinguish between scientific, non-scientific and pseudo-scientific subjects. To distinguish between these categories of subjects and to emphasise the importance of science communication, it is necessary to communicate science to various stakeholders: schools, government, decision-makers, the general public and the media.

An understanding of science makes the task of the role players in science – and especially the communication of science to the general public – even more imperative. The role players in science communication have to ensure that the message of science successfully reaches the general public (literate and illiterate; urban and rural societies; young and old) to ensure prosperity and the enhancement of a sustainable environment. The key role players in science communication in South Africa can be identified as *scientists*, who are the source or sender of the science message; *communication specialists at higher education institutions (HEIs)*, who fulfil a mediation function to convey the message of science to all stakeholders; and *South African journalists*, who are the final distributors of the message to all stakeholders (the recipients of the science message). There is, however a fourth key role-player in science communication, and that is the *executive management of HEIs*, since they should provide the communication specialists at their institutions with the trust and empowerment to distribute the message of science to journalists in order for these messages to reach the general public.

Science communication is still a new and vague concept to many South Africans. Limited research has been conducted on the key role players in science communication; the specific role of communication specialists at HEIs in science communication; and the relationship between the different key role players. However, in many countries, including South Africa, various studies have been conducted on public attitudes towards science, which is in general positive.

The problem identified in this study is that although science communication is regarded as a priority in South Africa, science messages are not effectively reaching the general public. There are several possible reasons as to why the general public is not well informed about science. One is that scientists find it difficult to simplify scientific facts so that they are understandable to the layman. Another reason is the lack of a proper relationship of trust and mutual understanding between scientists and journalists, resulting in inaccuracies in science articles that appear in newspapers, magazines and on television. A third reason is that communication specialists at HEIs, who are supposed to take

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responsibility for media liaison, experience a lack of trust and empowerment by their executive management to liaise with stakeholders, including the media, at their own discretion. According to De Beer (2001:84), the executive management at HEIs do not empower their communication specialists to discuss matters with the media without the involvement of the executive management. A fourth reason is a lack of training in the writing of science articles, which results in an inaccurate coverage of science in the media. Therefore, the role of communication specialists at HEIs is very important. Communication specialists have to build a bridge between an institution's management, scientists and the media as stakeholders of HEI.

The general research aim of this study is to investigate the relationship between key role players in science communication and to determine the role that they play in science communication. Following the general research aim, six objectives are stated: Firstly, to determine the importance of science communication amongst key role players in science communication (executive management, scientists, communication specialists) at HEIs in South Africa, as well as journalists in the South African media. Secondly, to determine if a relationship of trust and mutual understanding exists between key role players in science communication in South Africa. The third objective is to determine if the role of communication specialist is a role of strategist, manager or technician in the facilitation of science communication at HEIs in South Africa. Fourthly, to determine the extent of training provided at universities and technikons in South Africa for scientists, communication specialists and journalists to enable them to write science articles. The fifth objective is to investigate the coverage of scientific topics in articles in the South African mass media. The final objective is to analyse the content of articles on science in selected South African media from 1 March to 31 May 2004 and to compare the results of this study with a study conducted by Van Rooyen in 2002 (Van Rooyen, 2002).

The empirical component of the study supplements the theoretical component. In Phase 1, a quantitative, exploratory survey research was done to establish the role of communication specialists in science communication at HEIs in South Africa. In Phase 2, content analysis was used to analyse the content of scientific articles in selected print media over a period of three months. Van Rooyen (2002:21) invited researchers to repeat the study she conducted in 2002 at regular intervals. Therefore, based on the invitation of Van Rooyen, Phase 2 of this study was conducted, using the same criteria, method and time frame as Van Rooyen had done. Comparisons of the results of the two studies are provided.

The main conclusions of the study were:

- Although science communication is regarded as important by the key role players in science communication, not enough is being done by South African HEIs to promote the importance of

science to the general public, including the literate and illiterate; urban and rural; young and old people, to ensure a sustainable environment.

- There is not a proper relationship of trust and mutual understanding between the key role players in science communication.
- Communication specialists are regarded as managers, as opposed to strategists or merely technicians, in science communication, but they are not always empowered to act efficiently as facilitators in the mediation process between scientists and the media.
- There is a lack of proper training for scientists, communication specialists and journalists in science writing or science journalism in South Africa.
- The coverage of science in the media has not improved much since Van Rooyen's study was conducted in 2002.

Recommendations regarding the management of science communication can be summarised as follows. South Africa needs a national forum to conduct an audit and formulate a structured, reasoned national science communication action plan for South Africa. More feedback should be given to the science communication community about who should receive funding and what projects should be funded. The Government of South Africa should encourage higher education institutions to organise public debate sessions where scientists and the general public can discuss controversial issues regarding science and research in an open forum.

Furthermore, scientists should be encouraged to provide information to communication specialists so that they can distribute science messages to all stakeholders. Communication specialists should create and support a science writers' network in South Africa; develop and promote databases of science writers and media-friendly scientists; collect science articles from scientists and prepare them for publication together with supporting visuals; facilitate linkages and collaboration with corporate sectors; participate in international networking; and conduct visits to expert programmes.

It is imperative for communication specialists, scientists and journalists to receive training to optimally fulfil their roles in science communication. Communication specialists should have writing skills to be able to assist scientists and journalists to create messages about science acceptable and understandable to the literate and illiterate; urban and rural; young and old people of South Africa. A course or degree in science journalism is therefore imperative.

To enhance coverage of science in the media, science ideally needs to be integrated into popular, peak-time programmes such as local dramas, historical and other documentaries, talk shows, and

even soap operas. All mediums should be considered, including radio, television and the Internet to communicate science to the general public.

Die rolle van 'n wetenskaplike land, rask staat op wetenskap en tegnologie om ondersteuning aan wetenskap te bied om legitieme besluite te kan neem en meedingend in die internasionale mark te word. Wetenskap is nie egter nie ononderskei tussen wetenskaplike, nie-wetenskaplike of pseudo-wetenskaplike onderwerpe nie. Ten einde tussen hierdie onderwerpskategorieë te onderskei en om die betroubaarheid van wetenskapkommunikasie te beklemtoon, is dit noodsaaklik om wetenskap aan wettige betroubaarheid te kommunikeer skool, die regering, besigheidsmense, die algemene publiek en die media.

'n Oopheid van wetenskap maak die taak van die rolspelers in wetenskap – en veral die kommunikasie van wetenskap aan die algemene publiek – selfs meer onontbeerlik. Die rolspelers in wetenskapkommunikasie moet verseker dat die wetenskapsboodskap die algemene publiek effektief bereik (geletterd en ongeletterd; stedelike en landelike gemeenskappe; oud en jonk) en verstaan te verstaan asook die verspreking van 'n kulturele omgewing. Die kernrolspelers in wetenskapkommunikasie in Suid-Afrika is wetenskaplikes, as die bron van die wetenskapstudies; kommunikasiespesialiste by hoër onderwysinstellings met 'n media-terrein om die wetenskapstudies aan belanghebbende oor te dra; asook Suid-Afrikaanse joernaliste as die finale versprekers van die boodskap aan alle belanghebbende (die ontvangers van die wetenskapsboodskap). Daar is egter 'n vierde kernrolspeler in wetenskapkommunikasie, naamlik die uitvoerende bestuur van hoër onderwysinstellings. Hulle behoort die vertroue en bemagtiging van die kommunikasiespesialiste verskaf aan hulle instellings, te bied om die wetenskapsboodskap aan joernaliste te versprei, sodat hierdie boodskappe die algemene publiek effektief kan bereik.

Vir baie Suid-Afrikane is wetenskapkommunikasie op hierdie stadium nog 'n nuwe en vae begrip. Hoewel navorsing is gedoen rondom die kernrolspelers in wetenskapkommunikasie, die spesifieke rolle van kommunikasiespesialiste by hoër onderwysinstellings in wetenskapkommunikasie; asook die verhouding tussen die verskillende kernrolspelers. In baie lande egter, Suid-Afrika ingesluit, is verskeie studies uitgevoer wat betref die openbare beskouings oor wetenskap wat oor die kapasiteite beskou, ontwikkel.

Die probleem wat in hierdie studie geïdentifiseer is, is dat hoewel wetenskapkommunikasie as 'n prioriteit in Suid-Afrika beskou word, wetenskapsboodskappe nie die algemene publiek effektief bereik nie. Daar is verskeie moontlikhede oor hoekom die algemene publiek nie goed oor wetenskap ingelig is nie. Een is dat wetenskaplikes dit moeilik vind om wetenskaplike kennis sodanig te vereenvoudig dat dit verstaanbaar is vir die leik. 'n Ander rede is die gebrek aan 'n behoorlike verhouding van vertroue



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## Opsomming

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Suid-Afrika, as 'n ontwikkelende land, maak staat op wetenskap en tegnologie om ondersteuning aan industrieë te bied om ingeligte besluite te kan neem en mededingend in die internasionale mark te wees. Meeste mense kan egter nie onderskei tussen wetenskaplike, nie-wetenskaplike of pseudo-wetenskaplike onderwerpe nie. Ten einde tussen hierdie onderwerpskategorieë te onderskei en om die belangrikheid van wetenskapskommunikasie te beklemtoon, is dit noodsaaklik om wetenskap aan verskeie belanghebbers te kommunikeer: skole, die regering, besluitnemers, die algemene publiek en die media.

'n Begrip van wetenskap maak die taak van die rolspelers in wetenskap – en veral die kommunikasie van wetenskap aan die algemene publiek – selfs meer onontbeerlik. Die rolspelers in wetenskapskommunikasie moet verseker dat die wetenskapsboodskap die algemene publiek suksesvol bereik (geletterd en ongeletterd; stedelike en landelike gemeenskappe; oud en jonk) om welvaart te verseker asook die versterking van 'n volhoubare omgewing. Die kernrolspelers in wetenskapskommunikasie in Suid-Afrika is wetenskaplikes, as die bron van die wetenskapsboodskap; kommunikasiespesialiste by hoër onderwysinstellings met 'n media-funksie om die wetenskapsboodskap aan belanghebbers oor te dra; asook Suid-Afrikaanse joernaliste as die finale verspreiders van die boodskap aan alle belanghebbers (die ontvangers van die wetenskapsboodskap). Daar is egter 'n vierde kernrolspeler in wetenskapskommunikasie, naamlik die uitvoerende bestuur van hoër onderwysinstellings. Hulle behoort die vertroue en bemagtiging aan die kommunikasiespesialiste, verbonde aan hulle instellings, te bied om die wetenskapsboodskap aan joernaliste te versprei, sodat hierdie boodskappe die algemene publiek effektief kan bereik.

Vir baie Suid-Afrikaners is wetenskapskommunikasie op hierdie stadium nog 'n nuwe en vae begrip. Beperkte navorsing is gedoen rondom die kernrolspelers in wetenskapskommunikasie; die spesifieke rol van kommunikasiespesialiste by hoër onderwysinstellings in wetenskapskommunikasie; asook die verhouding tussen die verskillende kernrolspelers. In baie lande egter, Suid-Afrika ingesluit, is verskeie studies uitgevoer wat betref die openbare beskouinge oor wetenskap wat, oor die keper beskou, positief is.

Die probleem wat in hierdie studie geïdentifiseer is, is dat hoewel wetenskapskommunikasie as 'n prioriteit in Suid-Afrika beskou word, wetenskapsboodskappe nie die algemene publiek effektief bereik nie. Daar is verskeie moontlikhede oor hoekom die algemene publiek nie goed oor wetenskap ingelig is nie. Een is dat wetenskaplikes dit moeilik vind om wetenskaplike feite sodanig te vereenvoudig dat dit verstaanbaar is vir die leek. 'n Ander rede is die gebrek aan 'n behoorlike verhouding van vertroue

en wedersydse begrip tussen wetenskaplikes en joernaliste, wat uitloop op onjuisthede in wetenskaplike artikels wat in koerante, tydskrifte en op televisie verskyn. 'n Derde rede is dat die kommunikasiespesialiste by hoër onderwysinstellings, wie veronderstel is om verantwoordelikheid vir mediaskakeling te neem, 'n gebrek aan vertroue en bemagtiging vanaf hulle uitvoerende bestuur ervaar om met belangegroeppe, insluitende die media, volgens eie diskresie te skakel. Volgens De Beer (2001:84), bemagtig die uitvoerende bestuur by hoër onderwysinstellings nie hulle kommunikasiespesialiste om aangeleenthede met die media te bespreek sonder dat die uitvoerende bestuur betrokke is nie. 'n Vierde rede is 'n gebrek aan opleiding wanneer dit kom by die skryf van wetenskaplike artikels, wat aanleiding gee tot onjuiste dekking van wetenskap in die media. Die rol van kommunikasiespesialiste by hoër onderwysinstellings is derhalwe geweldig belangrik. Kommunikasiespesialiste moet 'n brug bou tussen 'n instelling se bestuur, wetenskaplikes en die media, as die belanghebbers van hoër onderwysinstellings.

Die algemene navorsingsdoelwit van hierdie studie is om die verhouding tussen kernrolspelers in wetenskapskommunikasie te ondersoek, en om te bepaal watter rol hulle in wetenskapskommunikasie speel. Na aanleiding van die algemene navorsingsdoelwit, word ses oogmerke gestel: Eerstens, om die belang van wetenskapskommunikasie tussen kernrolspelers in wetenskapskommunikasie by hoër onderwysinstellings in Suid-Afrika (uitvoerende bestuur, wetenskaplikes, kommunikasiespesialiste), sowel as joernaliste van die Suid-Afrikaanse pers te bepaal. Tweedens, om te bepaal of 'n verhouding van vertroue en wedersydse begrip tussen kernrolspelers binne wetenskapskommunikasie in Suid-Afrika bestaan. Die derde oogmerk is om te bepaal of die rol van kommunikasiespesialis 'n rol is van strateeg, bestuurder of tegnikus in die fasiliteringsproses van wetenskapskommunikasie by hoër onderwysinstellings in Suid-Afrika. Vierdens, om te bepaal wat die mate van opleiding is wat deur universiteite en teknikons in Suid-Afrika gebied word aan wetenskaplikes, kommunikasiespesialiste en joernaliste, ten einde hulle in staat te stel om wetenskaplike artikels te skryf. Die vyfde oogmerk is om die dekking van wetenskaplike onderwerpe in artikels in die Suid-Afrikaanse massamedia te ondersoek. Die finale oogmerk is om die inhoud van artikels oor wetenskap in geselekteerde Suid-Afrikaanse media vanaf 1 Maart tot 31 Mei 2004 te ontleed en om die bevindinge van hierdie studie te vergelyk met 'n studie wat deur Van Rooyen in 2002 (Van Rooyen, 2002) uitgevoer is.

Die empiriese komponent van die studie vul die teoretiese komponent aan. Tydens Fase 1, is 'n kwantitatiewe, verkennende opname gedoen om die rol van kommunikasiespesialiste in wetenskapskommunikasie by hoër onderwysinstellings te bepaal. Tydens Fase 2, is van inhoudsontleding gebruik gemaak om die inhoud van wetenskaplike artikels in geselekteerde, gedrukte media oor 'n tydperk van drie maande te ontleed. Van Rooyen (2002:21) het navorsers uitgenooi om die studie wat sy in 2002 onderneem het, met gereelde intervalle te herhaal. Derhalwe, gebaseer op

die uitnodiging van Van Rooyen, is Fase 2 van hierdie studie uitgevoer, met gebruikmaking van dieselfde kriteria, metode en tydsraamwerk as Van Rooyen. Vergelykings tussen die twee studies word gebied.

Die vernaamste gevolgtrekkings van die studie was:

- Hoewel wetenskapskommunikasie as belangrik beskou word deur die kernrolspelers in wetenskapskommunikasie, doen Suid-Afrikaanse hoër onderwysinstellings nie genoeg om die belangrikheid van wetenskap by die algemene publiek te bevorder nie, insluitend by geletterd en ongeletterd; stedelik en landelik; jonk en oud, om 'n volhoubare omgewing te verseker nie.
- Daar bestaan nie 'n behoorlike verhouding van vertrouwe en wedersydse begrip tussen die kernrolspelers in wetenskapskommunikasie nie.
- Kommunikasiespesialiste word gesien as bestuurders, in teenstelling met strateë of bloot tegnisiërs in wetenskapskommunikasie, maar hulle word nie altyd voldoende bemagtig om op te tree as fasiliteerders in die bemiddelingsproses tussen wetenskaplikes en die media nie.
- Daar is 'n gebrek aan gepaste opleiding vir wetenskaplikes, kommunikasiespesialiste en joernaliste wat betref wetenskapsjoernalistiek of die skryf van wetenskap in Suid-Afrika.
- Die dekking, wat aan wetenskap deur die media verleen word, het nie veel verbeter sedert Van Rooyen se studie in 2002 onderneem is nie.

Aanbevelings rakende die bestuur van wetenskapskommunikasie kan as volg saamgevat word. Suid-Afrika benodig 'n nasionale forum om 'n audit te doen en 'n beredeneerde, nasionale wetenskapskommunikasie aksieplan vir Suid-Afrika te formuleer. Groter terugvoer behoort aan die wetenskapskommunikasiegemeenskap gegee te word oor wie befondsing behoort te ontvang en watter projekte befonds behoort te word. Die Suid-Afrikaanse regering behoort hoër onderwysinstellings aan te moedig om openbare debatsessies te organiseer waar wetenskaplikes en die algemene publiek omstrede kwessies binne 'n ope forum kan bespreek, wat betref wetenskap en navorsing. Verder behoort wetenskaplikes aangemoedig te word om inligting aan kommunikasiespesialiste te verskaf, sodat hulle wetenskapsboodskappe aan alle belangegroepes kan versprei. Kommunikasiespesialiste behoort 'n wetenskapskrywersnetwerk in Suid-Afrika te skep en te ondersteun, databasisse van wetenskapskrywers en media-vriendelike wetenskaplikes te ontwikkel en te bevorder; wetenskaplike artikels vanaf wetenskaplikes in te samel en voor te berei vir publikasie saam met ondersteunende visuele materiaal; skakeling te fasiliteer asook samewerking met korporatiewe sektore; internasionaal te netwerk; en besoeke te bring aan gesaghebbende programme.

Dit is gebiedend noodsaaklik vir kommunikasiespesialiste, wetenskaplikes en joernaliste om opleiding te ontvang ten einde hulle onderskeie rolle in wetenskapskommunikasie optimaal te vervul.

Kommunikasiespesialiste behoort oor skryfvaardighede te beskik, sodat hulle in staat is om wetenskaplikes en joernaliste by te staan om boodskappe oor wetenskap te skep wat aanvaarbaar en verstaanbaar is vir diegene wat geletterd of ongeletterd is; stedelik of landelik; asook oud en jonk in Suid-Afrika. 'n Kursus of graad in wetenskapsjoernalistiek is derhalwe van die uiterste belang.

## Orientation and background

Om wetenskapsdekking in die media te verhoog, benodig die wetenskap ideaal-gesproke om opgeneem te word in gewilde, spitstyd programme soos plaaslike dramas, historiese en ander dokumentêre films, geselsprogramme, en selfs sepieverhale. Alle media moet oorweeg word om wetenskap aan die algemene publiek te kommunikeer, insluitende radio, televisie en die Internet.

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