The South African Computer Journal: 1989 to 2010

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Abstract

The South African Computer Journal (SACJ), as the successor of the Quæstiones Informaticæ journal founded by Derek Henderson, is part of his heritage to South Africa. This brief historical sketch of SACJ outlines the role of various organisations and people that have been part of the journal's story, giving some insight into its financing and functioning, and pointing out highlights in its past editions.

The Henderson Train

"The only way to be sure of catching a train is to miss the one before it."

G.K. Chesterton

Although I have spent practically my entire working life in South African computer science academia, and although Derek Henderson is rightly regarded as its progenitor, I never had the privilege of meeting him—I missed the Henderson train, so to speak. On several occasions our paths almost crossed, but didn't. For example, upon completing a PhD in 1975 I was appointed as a research fellow in the Department of Applied Mathematics and Statistics at the University of the Witwatersrand. However, Henderson had just left that department to become vice-chancellor at Rhodes. In fact, although I did not meet him, I was temporarily assigned his vacated office[1], even though its size was disproportionate to my junior status. (Needless to say, my occupancy did not last very long: soon afterwards, the department moved to the new Senate House, where offices with black ceilings were suitably sized to curtail any staff hubris.) Neither did I ever get to meet Henderson on my later visits to Rhodes as external examiner.

Indeed, at times it has felt as if some dark conspiracy was preventing me from meeting him, for we had much more in common than mere academic interests: we belonged to the same church denomination; and we *almost* share first names. (Unfortunately his parents spelled his name incorrectly!)

It would not be appropriate to describe our non-meeting in terms of the "two ships passing in the night" metaphor, since that might incorrectly suggest commensurability in our stature. Instead, another naval image seems nicely to encapsulate our non-meeting: that of a little boat traveling in the wake of a large ocean liner that is steaming on ahead into unknown waters, the little boat being buffeted by the liner's waves, yet thankful that a trajectory had been laid out for it by the mother ship.

For this is indeed how Henderson had affected my life: his pioneering work in establishing a South African academic journal in computer science had started a process which significantly influenced me for many years. In reference to the Chesterton quote above: even though I had missed the Henderson train, I caught the one that followed it.

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[1] It is of interest to note that a previous occupant of this office was one of the founding fathers of South African Statistics, John Kerrich. One of the stories about Kerrich was that, despite his incarceration in a Nazi concentration camp during World War 2, he was determined to use his time productively to advance the cause of statistics. As a result, he spent many hours tossing a coin and tabulating the number of times that it fell heads and tails. I was interested to discover in his office graphs mounted on hardboard that depicted these results.

The remainder of this text is intended to narrate something of the story of the South African Computer Journal (SACJ)—an academic journal which owes its existence to Derek Henderson, and which I edited between 1989 and 2008. Following a brief historical sketch, I shall refer to the various organisations and people that have been part of the journal's story. I shall then provide some insight into past editions of the journal, I shall indicate how it has been financed, and I shall give a perspective of future challenges. It should be noted that this text is a slight adaptation of an exit report that I delivered to the AGM of the South African Institute of Computer Scientists and Information Technologists (SAICSIT) in October 2008, before handing over the editorship to my successor.

Brief Historical Sketch

The first edition of Quæstiones Informaticæ (QI), the precursor to the South African Computer Journal, was a thirtysix page document in A5 format that appeared in June 1979. The joint editors were Derek Henderson (who was by then vice-chancellor at Rhodes) and Howard Williams, also at Rhodes. Its local subscription cost was set at R2-00 per copy and $3-00 for foreign subscribers. Three editions were produced under these editors.

In the early 1980's Williams left for Harriot-Watt University, Edinburgh. As vice-chancellor of Rhodes, Henderson presumably felt that, having overseen the establishment of the journal, it could safely be left in the hands of a new editor, Gerrit Wiechers from UNISA. Wiechers produced a fourth edition that appeared in November 1982. In an editorial note, he says:

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> "The Computer Society of South Africa, which sponsors the publication of QI, appointed me as editor … The editorial board functions under the auspices of the Publications Committee of the CSSA."

This fourth edition contained seven articles, four of which had been presented at the "South African Computer Symposium" in 1981. The annual subscription cost was recorded as R6-00 ($7-00).

It is interesting to note that the journal ran a banner proclaiming itself "An Official Publication of the Computer Society of South Africa", for at that stage South African computer science and information systems academics were still in the process of establishing academic bodies to represent their interests. This is evidenced by the fact that the September 1983 edition of QI not only indicates the journal as being "An Official Publication of the Computer Society of South Africa", but also an official publication of the "*South African Institute of Computer Science*".

Wiechers oversaw the production of a total of ten editions, and then handed the editorship over to Judith Bishop. It is not clear whether her appointment was ratified by the CSSA or by SAICS. Her first edition appeared in May 1988. In an editorial she noted that 73 papers had been received between June 1985 and June 1988, of which 53% had been published and 21% were still being processed. As in previous editions, many of these published papers had previously been presented at SA Computer Symposium conferences. At that stage, the existing annual subscription was raised to R20-00 per annum, and a page charge of R20 per page was levied, which Bishop characterised as "quite modest".

After accepting an appointment in Southampton, Bishop approached me to take over the editorship. This appointment was ratified by the executive council of SAICS. I oversaw the production of the April 1989 edition of QI vol 6(4). In the editorial of that edition I announced the decision of the SAICS executive to change the journal's name to SACJ /SART (the latter standing for "Suid-Afrikaanse Rekenaartydskrif") in the following terms:

"Arguments against this name change include the conciseness and uniformity of reference in both official languages provided by QI, and a certain kind of catchiness to the name. Those in favour of the name change regard the new proposal as being more descriptive for ordinary mortals (i.e. non-Latin scholars), less pretentious, and therefore more inviting for a wider audience. The fact that the new title identifies the journal as South African is also regarded as important."

At any rate, between January 1990 and June 2008, forty issues of SACJ were produced. Annual subscriptions rose from R32-00 ($32-00) to R120-00 ($60-00) and the page charge rose to R120 per page.

SACJ Organisational Relationships

In its early years, QI, and later SACJ, received much logistic support from the CSSA. Indeed, for a fee, the CSSA secretariat handled all matters relating to subscription, invoicing, accounting, postage and distribution. However, by the late nineties, these tasks were shifted to the Department of Computer Science and Information Systems at UNISA. Despite their onerous and costly nature, UNISA continued to carry them out efficiently and effectively—at no cost whatsoever to SACJ. For this often unnoticed service, UNISA and the staff involved are owed a debt of gratitude by South African IT academics.

As recently as June 2005, the banner on SACJ's front inside cover proclaimed the journal to be "An Official Publication of the Computer Society of South Africa and the South African Institute of Computer Science". Of course, this had become an anachronism: the journal no longer had any ties with the CSSA; and SAICS had morphed into SAICSIT[2].

Apart from prescribing that the editor of SACJ is an *ex officio* member of the SAICSIT executive committee, the SAICSIT constitution is silent about SACJ. Thus, while the appointment of previous editors had always been approved by an executive committee of the CSSA or SAICS, in SAICSIT there was a regulatory hiatus in relation to the editor's term of office, reappointment procedures, and editorial discretion. Everyone seemed to assume that to be editor was "a life sentence". Sensing that this process vacuum could become a problem, in 2007 the late Dewald Roode, the IS co-editor, and I carried out an informal survey of practices in similar journals, both nationally and internationally. Most seemed to have processes in place for the periodic appointment of an independent editor. Based on these findings, a motion was formulated by the SAICSIT executive committee, and formally adopted at the 2007 SAICSIT AGM. It provided that henceforth there shall be a five year term of editorship and it outlined an appointment process to be followed. It also formalised what had hitherto happened in any case: that the editor would function independently of SAICSIT, but would report back annually to the SAICSIT AGM.

This approved process was followed during the first half of 2008. It culminated in the appointment of Prof Lucas Venter from SAP-Meraka to serve a five year term as SACJ editor.

SACJ People Relationships

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2 As an aside, it is interesting to recall the discussions surrounding the name change from "South African Institute of Computer Science" (SAICS) to "South African Institute of Computer Scientists and Information Technologists" (SAICSIT). The IT suffix was intended to reflect the involvement not only of IS academics, but also of academics from other IT-related fields. Later, the acronym ICT came into vogue, but mercifully we have been spared a further name change to SAICSICT. Also at the time, it was argued that the word "Science" in the title should be changed to "Scien*tists*", and that "Information Technolog *ists"* should be used, because SAICSIT was made up of people, whereas an "Institute of Computer Science and Information Technology" would properly designate a building. It is not clear whether or not this was a spurious argument. Mercifully, the SAICSIT acronym avoids the agony of attempting to pronouncing all those "*ists*" suffixes.

It has always been considered important to have both computer science and information systems represented as academic disciplines as part of the SACJ editorial team. As a computer scientist, I certainly did not feel comfortable with selecting reviewers and adjudicating reviews for IS submissions. As a result, various IS co-editors were appointed over the years. These were Peter Lay, John Schochot, Lucas Introna, Niek du Plooy and Dewald Roode. Through their efforts that the quality of IS contributions published in SACJ were sustained at a very high international standard.

In about 2006, the editorial team was expanded to include as assistant editors Elainne Byrne and Irwin Brown on the IS side, and Gary Marsden on the computer science side.

One of the most onerous tasks in producing SACJ is that of professionally typesetting the various accepted papers. This was initially handled by Quintin Gee at Wits. Later the task was taken on by Riël Smit at UCT, who was followed by John Botha at Pretoria University. In 1999, Andries Engelbrecht took on the task assisted by Herna Viktor and later by Basil Worrall. Marco Slaviero has handled the task since 2005. These people deserve the community's sincerest thanks for having played an important role in keeping SACJ going.

An editorial board of SACJ was appointed, and was amended from time to time. It included a number of prominent international and national figures who were called upon on various occasions for advice and editorial guidance. They are to be thanked for their services rendered.

Most importantly, the unsung SACJ heroes have been the many people, both locally and internationally, who have volunteered their time to do reviews. Historically, SACJ's acceptance rate has been approximately 30% of submissions. The number of reviews since 1990 (excluding those handled by guest editors producing special editions) is estimated to be in the region of 1500. Behind these reviews were real people, selflessly and anonymously putting in many hours of work and reporting back with admirable diligence and care—a veritable testimony to the finest traditions of academia.

Reflections on Past Editions and Recent Developments
The principle objective of SACJ has been to provide a forum for local researchers to communicate their results. In addition, the journal has been used as a vehicle for communicating ideas, both by way of a "Communications" section, as well as by inviting various guest contributions. Table 1 lists a selection of some these. It shows that, in addition to being a forum for the exchange of ideas between local academics, there have also been several contributions both from academics from abroad, as well as from local industry.

Although most research contributions in SACJ reflect South African activity, there have also been research submissions from other parts of the world, including Africa, West Indies, India and Europe. Moreover, various international libraries subscribe to the journal, and since going online via the SABINET portal in 2001, SACJ has enjoyed world-wide exposure.

Table 2 shows a summary of SACJ output between January 1990 and June 2010. Out of the 44 editions to date, 11 have been special issues. Three of these (Numbers 7, 24 and 26) served directly as conference proceedings—a practice that is no longer tolerated in a funding environment which strongly differentiates between archival journals and conference proceedings. Numbers 17, 40 and 42 have followed a better model, where conference contributions were revised and re-evaluated, thus becoming journal articles in a special edition. There are several other papers that also fall into this category, but that have not specifically been taken up in special issues. Number 36, the joint special edition with the French-African online journal was highly successful. Oppor-

tunities should be sought for repeating this model. Finally, it should be noted that the Workshop on Formal Aspects of Computing (WOFACS) editions (numbers 9,13,19, and 22), edited by Chris Brink, are actually collectors items for those interested in the formal method domain. They contain tutorial and other material by such internationally known luminaries as Brinksma, Morgan, Gries, Misra, Jackson and others.

Table 3 identifies the journal's ten most widely cited articles [3]. The editions in which these articles appeared are marked by an asterisk in Table 2. There is a suggestion here that high citation papers are more likely to occur in special editions. Indeed, the top seven most highly cited papers are in special editions, and three of these are from the WOFACS editions.

Kotzé and van der Merwe (2009) [4] have conducted a statistical review of the first 40 SACJ editions, providing a historical view of computing research in South Africa. They analyse and discuss the number of research articles over time, tabulated by ACM category as well as by tertiary institution. The authors are careful not to naively portray these results as fully of South African IT research in general. Although their work does not include a citation analysis, they suggest that one way of improving the journal's visibility and citation rate might be to make it an open-access journal.

This challenge has been taken up by the new editor who has recently announced http://sacj.cs.uct.ac.za/ as a new site at which electronic submissions can already be made, and where open-access versions of the journal will soon become available. However, the two traditional channels for making the journal available will also remain in place for the time being: in hardcopy format to subscribers and SAICSIT members; and via the SABINET portal (http://journals.sabinet.co.za/comp/).

Finances
Initially, SACJ worked quite hard to find sponsorship to cover costs from private industry. However, once institutions of local academics who publish in SACJ started to receive a State subsidy, it seemed quite legitimate to levy a page charge on authors. The expectation was that authors should get their institutions to cover those charges. It has been my experience that this is seldom a problem. At any rate, the editor reserves the right to waive charges in deserving cases. These charges, together with UNISA covering postage costs, and a small revenue stream from the SABINET portal meant that the journal more or less broke even. Where shortfalls arose, they were rightfully covered by SAICSIT, since members receive the journal at no cost.

It is interesting to reflect upon the fact that if all 415 articles published to date had, in real terms, been subsidised at the rate of about R80000 per article, then the total income to SA tertiary institutions would be in the order of R33 million (or about R750 000 per edition). Of course, this is an overestimate, since not all authors are from such institutions. Furthermore, the subsidy amount has been increased considerably in real terms in recent years. Nevertheless, viewed from the perspective of state-generated income, SACJ could be regarded as a money-spinner!

Future Challenges
For as long as SACJ is recognised by the State for subsidy purposes, its financial future seems relatively secure. This does not reduce the need for marketing, both internally (to South Africa) and externally. I believe that marketing needs to be prioritised in the near to medium term future. Part of the problem is

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3 A.W. Harzing, *Publish or Perish*, version 3.0, available at www.harzing.com/pop.htm, 2010.
4 Paula Kotzé, Alta van der Merwe, The Research Foci of Computing Research in South Africa as Reflected by Publications in the South African Computer Journal, *SACJ*, No. 44, 67-84, December 2009

this: South Africans are quick to equate local with second rate. It is especially distressing when those higher up the bureaucratic ladder take this attitude—I refer in particular to deans, research committees and appointments committees, NRF reviewers, etc. The best answer to such scepticism is to increase the inter national profile of SACJ by more aggressive marketing. This should result in in creased readership and also an improved citation rate.

As part of the effort to improve the journal's visibility, special efforts should be made by contributors to cite SACJ papers when they publish in ISI journals, and *vice versa*. This is, of course, the rather incestuous pre-condition for obtaining a listing as an ISI-Thompson journal. The acquisition and retention of this status should be a fixed long term goal for SACJ. The fact that there are several SA journals that already enjoy this status, shows that the goal is indeed attainable —even from our humble vantage point.

Concurrently, SACJ (and indeed SAICSIT) should strive to deepen its African footprint. I believe that there is a hunger for collaboration with SA IT across the entire continent. There is also much unexploited talent in these African coun tries, and many such talented individuals look to SA for leadership. French Africa in general, and North African in particular, have many top class research ers. Much more can be done to build up collaborative synergies across the con tinent and it is to be hoped that SACJ will be part of that.

Table 1. Various Highlights and Guest Contributions

Number	Author	Title
1	P S Kritizinger (UCT)	Funding Computer Science Research in South Africa
2	P Lay (UCT)	Information Systems Research: A Teleological Approach?
3	J Gutknecht (ETH)	Programming is Teachable or How to Leave the Rabbits in the Hat
4	H Steiner (MBP Software) & P Visser (Grinaker)	Does Today's Industry Need Qualified Computer Scientists? (Two opposing viewpoints)
5	G Barth (Kaiserlautern)	Why the Fuss About Neural Networks?
6	E Coffman (AT&T)	Impressions of Computer Science Research in SA
8	JD Roode (UP)	The Ideology, Struggle and Liberation of IS
10	P S Kritzinger (UCT)	IT Research in the European Community
11	L D Introna (UP)	Ideologies of Information Systems and Technology
12	F H Lochovsky (Hong Kong)	Organizational Computing Technologies for Supporting Organizational Activities
14	M R Jones (Cambridge)	BPR: Management's New Paradigm or Emperor's New Clothes?
16	E Blake (UCT)	IT & SA's Green Paper on Science and Technology
16	JM Bishop (UP)	Status of Computing Manpower & Training in Tertiary Education in Southern African Universities in 1995
17	B von Solms (RAU)	Information Security - The Child who Came Home
18	S S Mncube (SA Development Bank)	A Pragmatic Approach to Development Information on a World Wide Scale
23	P Machanick (Wits)	Computer Science & IS: The Future?
25	D Liang	Stef Postma: In Memoriam
30	JD Roode (UP)	IS Research: A Matter of Choice?
35	B Jolliffe (UNISA)	TheWord-processing Patent: A Sceptical View From a Person Having Ordinary Skill in the Art
39	S Gruner (UP)	What is Informatics?

Table 2: Overview of SACJ Editions

Number	Date	Special Editions	No. of Articles		Pages
			Research	Other	
1	Jan 90		8	6	62
2	May 90		7	6	53
3	Oct 90		7	6	72
4	Mar 91		9	5	81
5	Sep 91		8	5	75
6	Mar 92		10	3	90
7*	Jul 92	7th SA Computer Sympsium	21	0	141
8	Nov 92		7	6	86
9	Apr 93	WOFACS '92	4	2	92
10	Sep 93		8	3	60
11	May 94		6	9	102
12	Nov 94		4	4	53
13	Apr 95	WOFACS '94	4	0	64
14	Jul 95		8	5	88
15	Dec 95		6	0	60
16	Apr 96		5	2	65
17*	Sep 96	Special Edition: Computer Security	6	1	53
18	Dec 96		8	2	72
19*	Feb 97	WOFACS '96	4	1	102
20	Dec 97		7	3	62
21	Aug 98		5	4	68
22*	Mar 99	WOFACS '98	5	1	60
23	Jul 99		9	2	120
24*	Nov 99	SAICSIT '99	37	0	268
25	Aug 00		9	2	73
26*	Nov 00	SAICSIT '00	36	0	256
27	Aug 01		8	1	69
28*	Jun 02		9	1	81
29	Dec 02		9	1	74
30	Jun 03		11	1	107
31*	Dec 03		9	1	69
32	Jun 04		8	2	88
33	Dec 04		9	0	81
34	Jun 05		8	4	88
35	Dec 05		14	2	132
36	Jun 06	Joint Special Edition: SACJ & ARIMA	11	1	115
37	Dec 06		11	0	98
38	Jun 07		6	2	62
39	Dec 07		6	1	54
40	Jun 08	Special Edition: Pattern Recognition	11	3	95
41	Dec 08	`	10	0	96
42	Dec 08	Special Edition: SACLA 2008	13	1	96
43	Jul 09		7	1	74
44	Dec 09		7	3	96
		Totals	415	103	3953
		Average per edition	9.5	2.5	89.8
* See Table 3					

Table 3: Citation Performance

Cites	Cites/year	Authors	Title	SACJ
158	14.36	F Van den Bergh, A Engelbrecht	Cooperative learning in neural networks using particle swarm	2000 (26)
116	6.44	D Gabbay, HJ Ohlbach	Quantifier elimination in second order predicate logic	1992 (7)
64	5.33	C Morgan, A McIver	pGCL: Formal reasoning for random algorithms	1999 (22)
55	3.93	J Peleska, M Siegel	Test automation of safety-critical reactive systems	1997 (19)
37	2.47	DB Parker	A new framework for information security to avoid	1996 (17)
29	2.42	MA Jackson	Problem analysis using small Problem Frames	1999 (22)
24	2.00	A Holt	Formal verification with natural language specifications: guidelines, experiments and lessons so far	1999 (24)
17	2.13	T Schlienger, S Teufel	Information security culture—from analysis to change	2003 (31)
15	1.67	G Marsden, M Jones	Ubiquitous computing and cellular handset interfaces—are menus the best way forward?	2002 (28)
15	0.83	PJA De Villiers, WC Visser	ESML—A validation language for concurrent systems	1992 (7)