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Appreciation

PROFESSOR JIM CHANDLER

IT IS A HAPPY COINCIDENCE that in this special issue, devoted to the 3rd Virtual Geoscience Conference (VGC 2018), we pay tribute to Professor James Henry Chandler (invariably known simply as Jim Chandler), who was a member of the Scientific Committee for both VGC 2016, held in Bergen, Norway (Fig. 1) and VGC 2018, held in Kingston, Canada. Jim Chandler has made an outstanding contribution to both photogrammetry and the geosciences, as well as to *The Photogrammetric Record*. Jim has recently decided to resign both from his role as Professor of Geomatics at Loughborough University, UK and also his membership of the *Record*'s International Editorial Board (IEB). Jim is held in such high professional esteem and has worked so tirelessly for both his discipline and this journal that it is fitting we celebrate his legacy in the year of his retirement.

A common theme that will become apparent in the following pages is Jim's role in promoting interdisciplinary research. "Working at the interface of photogrammetry with geomorphology" and "crossover geomatics–geoscience research" are phrases Stuart Lane and Simon Buckley have made in their major contributions to this Appreciation. Their thoughts are augmented by reminiscences from Jon Mills, Dirk Rieke-Zapp and Rene Wackrow. In addition, this Appreciation also recalls parts of the citation when Jim received the Founders' Award of the Remote Sensing and Photogrammetry Society (RSPSoc, 2014), which included contributions from Ian Dowman, Clive Fraser, John Fryer, Philippa Mason,

FIG. 1. Professor Jim Chandler (right) at the 2nd Virtual Geoscience Conference in Bergen, Norway in 2016.

Jon Mills, Paul Newby and Stuart Robson. It is therefore hoped that these pages provide a worthy tribute to Jim Chandler's outstanding professional life.

EARLY CAREER

The RSPSoc (2014) citation provides the following excellent account of Jim's early career:

> Jim Chandler received his BSc from Newcastle upon Tyne in 1983 and PhD from The City University in 1988. Jim's PhD thesis was on monitoring geomorphological change using archival oblique aerial photography of the Black Ven landslide in Dorset (principally using ex-RAF and Cambridge University Collection imagery as well as his own non-metric oblique photographs from a Rollei film camera, all manually measured on the Intergraph InterMap Analytical (IMA) plotter, supported by a hand-coded self-calibrating bundle adjustment running on a Gould mainframe and early IBM AT computers).
>
> He spent a brief spell as a land surveyor and then survey computer programmer between his two degrees (1984–1986), and was then Contracts Manager at The City University after his PhD (1989–1993). Here he took on the day-to-day running of City's Engineering Photogrammetry Unit under Mike Cooper (working with Zeiss UMKs and the then leading-edge Intergraph IMA analytical plotters and Microstation 3D CAD systems).

Stuart Lane emphasises the innovative work that Jim undertook for his doctorate:

> His PhD work developed analytical photogrammetry to allow the extraction of data on the Black Ven landslide, on the Dorset coast of the UK. This remains one of the best theses that I have ever read. Through developing the application of analytical photogrammetry to historical imagery, he showed that it was possible to unlock the spatial signature of geomorphic processes hitherto unmeasured. He had the privilege of being directed by two giants of the time: Mike Cooper, Professor of Engineering Surveying at The City University; and Denys Brunsden, Professor of Geomorphology at King's College London. It was only a couple of years into my own PhD when I realised the true importance of what Jim had done in his own research. Denys Brunsden, in a keynote to the quadrennial International Association of Geomorphologists meeting in Hamilton, Canada in 1993, described Jim's PhD as the most fundamental contribution to the discipline of geomorphology in many decades. Unlike other environment-facing disciplines like climatology and hydrology, there was (and still is) no systematic and long-term recording of geomorphic processes. Historical processes (such as deposition rates) may be constructed from cores and other similar palaeo-records, but these are rarely rich enough in space to reconstruct the dynamics of erosion and deposition processes. Jim's PhD work was so important in this context. Whilst using the geomorphological records contained in historical imagery was not entirely original, doing this at high precision and resolution, using oblique images as well as imagery obtained using non-metric cameras or where the internal camera geometry was not known a priori, was ground-breaking. It meant that almost any

historical photography that met certain conditions (for example, sufficient overlap) could be used. Four classic papers came out of his PhD (amongst many others): Chandler and Cooper (1989) in *The Photogrammetric Record*, focusing on using a self-calibrating bundle adjustment to cope with a lack of ground control and unknown internal orientation parameters; Chandler et al. (1989) in *The Journal of Photographic Science*, concerned with analytical photogrammetry as applied to oblique aerial photography; one in the *Quarterly Journal of Engineering Geology* (Chandler and Moore, 1989) concerned with monitoring slope stability using analytical photogrammetry; and a fourth (Chandler and Brunsden, 1995) in *Earth Surface Processes and Landforms*, using data from Black Ven to identify cyclical behaviour in landslide dynamics.

Loughborough Years

Stuart Lane continues his account following Jim Chandler's appointment as a lecturer at Loughborough University in England's East Midlands:

> Jim's move to Loughborough in 1994 was clearly the opportunity that allowed him to develop what was to become a sustained academic career, being promoted to Senior Lecturer in 1988 and appointed to a Chair in Geomatics in 2009. But it was also a time when the wider geomorphological community began to realise the extent to which his skills could be harnessed in their own research projects. He built on collaborations that started with Keith Richards at the University of Cambridge; he developed photogrammetry for studying river flumes with Peter Ashmore at Western Ontario, Canada; he was the first to show geomorphologists, with Mladin Stojic, that photogrammetry could be automated under certain image constraints (Stojic et al., 1998); he began to build his own group at Loughborough with students that included Mike Gooch (who addressed the thorny issue of finding signals amongst the noise associated with digitally-stereomatched point clouds; Gooch and Chandler, 2000), Anuar Ahmad and Jan Walstra. He also profited from collaborations with other Loughborough researchers: geomorphologists such as Steve Rice and Ian Reid, and engineers such as Koji Shiono. Looking across his early time in Loughborough, it was probably his 1999 paper in *Earth Surface Processes and Landforms* (Chandler, 1999) that was crucial for many geomorphologists as it was therein that he showed that digital photogrammetry removed one of the two remaining blocks to the widespread use of photogrammetry in geomorphology, namely the cost of analytical plotters and the time needed to manually digitise in stereo.

Enlightening Geoscientists to Photogrammetry

Jim Chandler's pivotal role at the interface of photogrammetry with geomorphology and geoscience has been noted by several of our contributors. This has meant making earth scientists aware of basic photogrammetric tenets. Stuart Lane relates Jim's pivotal role in demonstrating to geoscientists how modern photogrammetric techniques have removed previous barriers to its implementation in the geosciences:

I think there are two particular and closely related themes that merit mention in this account. The first is Jim's obsession with error and its correct identification and management. I remember debates with him over the meaning of precision and accuracy, reliability, robustness, and their relationship to systematic and random errors. I am sure that this comes from his training and experience in engineering surveying with Mike Cooper, but it is the hallmark of why his achievements are so important. They have a rigour that is a role model for many geoscientists. The second is related and highly topical. Following on from a decade in geomorphology, the 2000s, when laser scanning became increasingly seen as the "surveying norm", we have seen that through the 2010s the rediscovery of photogrammetry as a standard tool for geomorphologists through structure-from-motion multiview stereo (SfM-MVS) photogrammetry. This SfM-MVS technique effectively removed the second blockage to the adoption of photogrammetry for many geomorphologists as it substantially reduces the constraints on survey design associated with initial applications of digital photogrammetry. Yet, many early geomorphologists who were using SfM-MVS photogrammetry did not bother including the word "photogrammetry" and a group of geomorphologists have even published a book on the topic entitled simply *Structure from Motion*. The geomorphological community was initially utterly oblivious of its photogrammetric origins and the issues that surround the correct application of photogrammetry. Photogrammetric matters have become more, and not less, important with the use of unmanned aerial vehicles (UAVs) that use consumer-grade digital cameras, with unknown and unstable internal geometry. Here, Jim has worked fairly tirelessly to remind geomorphologists of the importance of applying photogrammetry correctly. When geomorphologists thought they had discovered a wonderful new technique for monitoring the 3D form of hillslopes in 2002, Jim was quite right in pointing out that they had simply reinvented the proverbial wheel (Chandler et al., 2003): he had developed the technique (correctly) in the 1980s. I sat through a keynote lecture from a leading geomorphologist at a major international meeting about five years ago where they bemoaned the presence of doming in their SfM-MVS photogrammetrically generated DEMs of difference, acquired using a consumer-grade camera mounted on a UAV with the image plane parallel to the ground surface and limited ground control. Jim would have been horrified at the extent to which basic photogrammetric lessons regarding optimal survey design had been overlooked. It is not surprising that these issues have given a new impetus to his research over the last decade, looking at the quality that can be acquired with software such as Autodesk 123D Catch (for example, Chandler and Fryer, 2013), with resources like a smartphone (Micheletti et al., 2015a), and the crucial and continued role played by camera calibration, image geometry and ground control in data acquisition (Sanz-Ablanedo et al., 2018) and the challenges of using UAV-acquired imagery (Sieberth et al., 2014).

> Through a combination of creative innovation and rigorous attention to the basic principles of engineering surveying and photogrammetry, Jim has not only served geomorphology but also photogrammetry. He has shown that the exciting technical developments that have occurred between the mid-1980s and the present render photogrammetry not less, but more, important.

Simon Buckley independently concurs about the pivotal role of Jim's 1999 paper (a contribution which forms the subject matter of another article two decades later is indeed remarkable):

> Impact is an important consideration in today's academic world. Jim's 1999 paper in *Earth Surface Processes and Landforms* (Chandler, 1999) was a landmark, introducing and making recommendations on photogrammetric best practice for a new generation of geomorphologists starting out with digital photogrammetry. The impact of this paper is still being felt today and it was even revisited 20 years on, following the recent explosion in interest of structure from motion (SfM) photogrammetry, which is now used almost as a standard method by geoscientists (Fawcett et al., 2019). This constitutes a real impact of a career in photogrammetry and earth science!

ISPRS Activities

Jim Chandler has played a central role in promoting UK influence within the International Society for Photogrammetry and Remote Sensing (ISPRS), especially in the period from the Beijing Congress in 2008 (Fig. 2) to Prague in 2016. Jon Mills relates:

> Probably my closest working relationship with Jim over the years came during the UK hosting of ISPRS Commission V, "Close-range Sensing: Analysis and Applications", during the quadrennial period 2008–2012.
>
> It is not unfair to say that UK photogrammetry was somewhat in the doldrums in the mid-2000s. The UK's 2008 bid for Commission V was a coordinated attempt by several UK-based academics working in the field to give a much-needed shot in the arm to nationwide activity. As well as the Presidency, we pushed hard at the 2008 Beijing ISPRS Congress (Newby et al., 2009) for the formation of several UK-led working groups (WGs), one of which was a proposal from Jim for a new WG to promote wider and wiser application of close range photogrammetry and laser scanning within the earth sciences. It seems incredulous now, but there was significant resistance to this new WG from various factions during the forming of the Commission WGs post-Congress. Without going into details, after numerous robust discussions held over a period of several months, Jim's resilience won the day and WG V/6, "Close Range Morphological Measurement for the Earth Sciences" was finally born early in 2009. The, perhaps coincidental, timing of the new WG formation with the emergence of a new era of algorithms for photogrammetric computer vision, lower-cost laser scanning instrumentation and so on, combined with Jim's strong leadership and management, must surely make this one of the most successful new ISPRS WGs of recent times.

FIG. 2. Jim Chandler (JC, third from right) at the UK Exhibit at the ISPRS Beijing Congress in 2008. Also pictured are (left to right): Pauline Miller, Simon Buckley, Peter Woodsford, Jon Mills, JC, Paul Newby and David Holland. Photo: Susan Newby.

> Indeed, Jim's legacy lives on today in ISPRS through WG II/10 (3D Mapping for Environmental and Infrastructure Monitoring) for the period 2016–2020, not to mention the vast number of geomorphologists and other earth scientists now ubiquitously applying "photogrammetric" techniques in their work around the globe.

Simon Buckley adds his own perspective:

> It is through his lead in crossover geomatics–geoscience research where Jim has made the most impact (that word again) on my career so far. At the 2008 ISPRS Congress in Beijing, we participated in meetings to define working groups for Commission V. Jim's proposal for a WG connected to close-range measurement in earth science made sense given the increasing interest and adoption of techniques such as laser scanning and photogrammetry by earth scientists. Despite resistance, WG V/6 (later V/5 for 2012–2016) was established and quickly gained members from a broad group of geoscience and geomatics researchers, vindicating the need for a multidisciplinary approach. Our collaboration laid the foundation for involvement in the emerging Virtual Geoscience Conference series, which was convened in Bergen in 2016. Conversations around the need to recognise common challenges and reach out to scientists from many areas of the earth sciences helped shape the conference and make it a success (Buckley et al., 2017), continued with the 2018 event in Kingston (Canada) as reported in this special issue.

Dirk Rieke-Zapp recalls meeting Jim Chandler for the first time at the 2008 Beijing Congress:

> Both of us were aware of each other's research for several years before we first met in person at the ISPRS Congress in 2008. In Beijing, I was invited to join the International Editorial Board (IEB) of The Photogrammetric Record by Paul Newby, where Jim Chandler served as Editorial Advisor. After the Beijing Congress Jim organised and chaired ISPRS working group V/6: "Close Range Morphological Measurement for the Earth Sciences". He got the working group started and a small team, always involving Jim, kept it active for two terms until 2016. During the same period of time, we co-organised sessions at the European Geosciences Union (EGU) General Assembly, the major annual earth science meeting in Europe. Although we have not (yet) published articles together, we jointly promoted photogrammetric applications for earth surface process quantification for several years in the photogrammetric, as well as in the earth science, community with quite some success.

RSPSoc and The Photogrammetric Record

Jim Chandler's role in UK society affairs, firstly with the Photogrammetric Society and then (after merger) with RSPSoc, are well related in the Founders' Award citation (Fig. 3; RSPSoc, 2014):

> Jim's tireless efforts for our Society began at the Photogrammetric Society (PSoc) and spanned the merger with the Remote Sensing Society (RSS) to form RSPSoc. He served on the PSoc Council between 1996 and 2001, becoming a Vice-President in 2000. After the merger he was Vice-Chairman of RSPSoc (2001–2003) and he remained on Council until 2005.
>
> Jim was always an enthusiast for Society publications and his massive efforts engendered by this enthusiasm have arguably been his greatest contribution to the Society. He was one of the main instigators, and the creator, of the first electronic version of The Photogrammetric Record. This took the form of a CD-ROM, containing six issues (1995–1997) included in the October 1998 Record. Amusing to us now in 2014, the CD-ROM came with the following recommended computer system requirements: "... 386 minimum, 486, Pentium recommend ... MS Windows 3·1 ... 4MB RAM ... 5MB hard disc space ...". Jim took over as Chairman of the PSoc Publications Committee from Paul Newby when the latter became Editor of the *Record* in 1999, continuing the role until the Societies' merger in 2001. Initially, RSPSoc had no equivalent committee, but by 2002 Jim was once again Chairman of the newly formed RSPSoc Publications Committee, and continued in this role until handing over to Mark Cutler in 2004/5. Jon Mills feels that "without Jim's significant efforts the *Record* probably wouldn't exist today, let alone be the success it is". Jim was pivotal in maintaining the *Record's* position in the Institute of Scientific Information (ISI) database. Jim's part in the negotiation of new printing contracts proved to be

FIG. 3. Jim Chandler (right) receives the Founders' Award from RSPSoc President Professor Paul Curran at Aberystwyth University in 2014.

> extremely time-consuming though far more successful than was originally thought possible. However, this was only a first step towards the co-publication arrangement with Blackwell Publishing (now Wiley) which is still in place today. In the run up to, and after, the merger, Jim was one of the prime movers, along with Paul Newby and Bob Taft, in the development of this collaboration with Blackwell which eventually took effect in March 2003.
>
> Already Editor Paul Newby's right-hand man and chief helper and supporter, Jim joined the International Editorial Board (IEB) of the Record in 2002, immediately creating his new role of IEB Coordinator. In this capacity, he modernised the journal's peer review system and managed it for the Editor, making a massive contribution to the maintenance of the traditional high standards and to raising its ISI ranking over recent years, until his eventual handover to Simon Buckley in 2010. Still a member of the IEB under Editor Stuart Granshaw, Jim's support for *The Photogrammetric Record* continues to this day.

As noted above, Simon Buckley took over from Jim Chandler as IEB Coordinator for the *Record* in 2010 and makes the following observations:

> Jim has been closely associated with the *Record*, becoming International Editorial Board (IEB) Coordinator in 2002 and providing a more formal centre-point for handling submissions and strategy for the journal. Later in 2003, I was a postdoc at the University of Newcastle, Australia, where Jim was on a six-month sabbatical. Here we discussed his involvement in the *Record's* change of publisher to Blackwell (now Wiley), which marked an increased international profile for the journal. In 2010, when I was approached to take over his role as IEB Coordinator, Jim acted as a mentor for my transition to the role. Later, he was always an IEB member

who could be counted on to deliver paper review coordinations, something that was highly appreciated.

As well as numerous articles in many well-respected geoscience and geomatics journals, Jim has published many papers in the *Record* for over three decades. The first was whilst he was still researching for his doctorate with fieldwork in Nepal (Chandler et al., 1987) and the latest is contained in this very issue (Parente et al., 2019). Between these two, Jim has published a paper in the *Record* almost every year or two (a full summary can be found by looking up "Chandler" in *The Photogrammetric Record*'s Cumulative Index, on the journal's homepage at https://onlinelibrary.wiley.com/journal/14779730). Some of these are noted in the references at the end of this paper, along with a flavour of the other journals publishing Jim's work.

Other professional roles include Fellow of the Royal Institution of Chartered Surveyors (RICS) Geomatics Professional Group from 1998 to 2019, where he served on the RICS Education Trust, and a Senior Fellow of the (UK) Higher Education Academy (HEA).

Personal Reminiscences

It seems appropriate to include in this Appreciation reminiscences from all our contributors that reveal the personality behind this outstanding academic and researcher. First of all, Stuart Lane:

> I arrived at The City University in the summer of 1991 as Jim's first PhD student, with no training in either land surveying, photogrammetry, or even in computer programming, but at least with a rudimentary background in statistics. The philosophy behind my PhD was similar to his own experience, with Jim providing the photogrammetry and surveying and Keith Richards at Cambridge the geomorphology. I vividly remember walking to lunch with Jim in June 1991, when I was at City for some pre-PhD training. He started to become conscious of what he had taken on. In a series of fairly pointed questions, he rapidly realised that he had to send me out into the field to learn how to set up a tripod over a survey point (which he then left me doing for what seemed like hours, until he showed me how to do it in a few minutes). I have similar memories of being taught how to develop films in a tent at 2500 m above sea level, to reduce survey data and to process it in adjustment software, to use an analytical plotter (at which point I think Jim's hair started to grey as it took me some time to grasp viewing imagery in stereo) and to adapt computer-aided design (CAD) software to form and process digital elevation models (DEMs). But the result was we were able to produce the first ever DEMs of rivers (Lane et al., 1994) and to use these to quantify river dynamics through time (Lane et al., 1994, 1996). Throughout this time Jim was an active supervisor, not only academically but personally. He survived camping at 2500 m, with no facilities other than food that could be rehydrated. His humour then (which perhaps today might no longer be viewed quite as acceptable as it was then) certainly helped other students to survive the experience. I owe Jim an enormous debt, academically and personally, and I hope that his retirement is as rewarding as his academic career must have been.

Jon Mills describes his relationship with Jim:

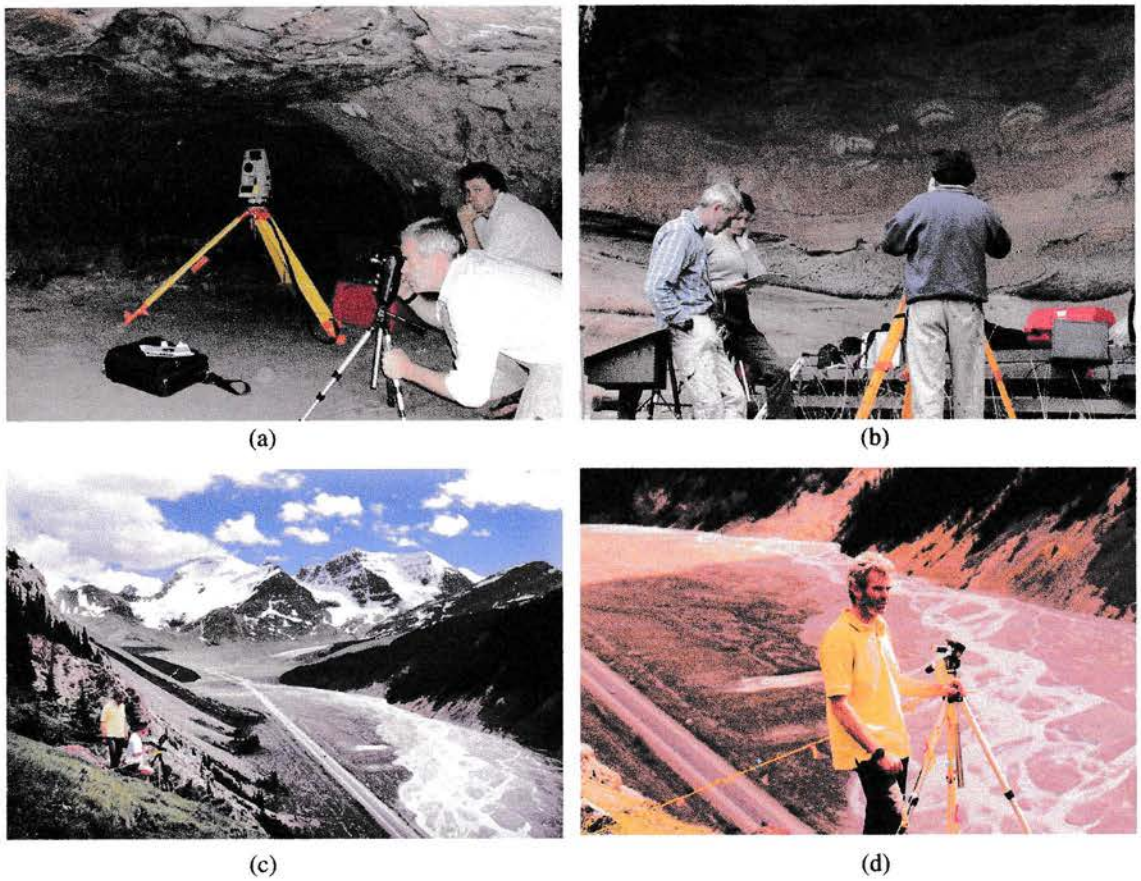
> I've been in regular, if somewhat infrequent, contact with Jim since we first met at a Photogrammetric Society Thompson Symposium in Durham sometime during the late 1990s. For the most part, our relationship over the last couple of decades has involved such delights as reciprocal PhD examining duties, attendance at ISPRS UK Committee meetings and deliberating the future of *The Photogrammetric Record*. I could add socialising with the odd alcoholic beverage at conferences in far-flung corners of the world to that list, but my university paymasters probably wouldn't appreciate that observation in the enlightened times in which we now find ourselves.
>
> Congratulations Jim, my friend. It has been a privilege to "work" alongside you over the years, and you can enjoy your retirement safe in the knowledge that your work is complete: it's time to forget about the trials and tribulations of 21st-century UK higher education and have some fun again!

Simon Buckley has vivid memories of Jim, including his favourite coloured top.

> I have known Jim since 1999, when I started as a PhD student at Newcastle University (UK). At (then) Photogrammetric Society meetings, he was famed for wearing a green jumper! As a research student starting out on a project involving photogrammetry and earth science, he later became a regular point of reference for his contributions published in *The Photogrammetric Record* and other international journals. At that time, he was one of few geomatics researchers working with, and publishing on, cross-disciplinary measurement topics within geomorphology and the wider earth sciences.
>
> In 2003, Jim acted as external examiner at my PhD viva, offering a friendly grilling and ensuring standards were kept high. I did not forget his good advice to be vigilant when checking the source of citations.
> My relationship with Jim has stretched over a 20-year period and across multiple situations throughout my career. Thanks, Jim, for being a mentor and inspiration, and for showing it was possible to transition from a pure photogrammetrist to a "digital geoscientist" (taking the liberty to name a new discipline). And, of course, the banter at all the conferences over the years made it fun to be associated with you!

Dirk Rieke-Zapp emphasises Jim's role as a team player:

> While the academic world is full of competition for grants, positions and citations, it does not function without collaboration and teamworking. Joining different teams with Jim Chandler on several occasions, I would like to highlight his team spirit. One of our best joint performances was at the RSPSoc conference in Leicester in 2009, playing on the teachers' side at the traditional football game of teachers versus students. This is a game that will not show up in our academic records, but it was a pleasure to play together on the same team on this and other occasions.



(a) (b)

(c) (d)

FIG. 4. Jim Chandler in the field. Top: surveying Aborigine rock art in New South Wales, Australia. Bottom: quantifying sediment transport on the River Sunwapta, Alberta, Canada.

> Jim Chandler provided his photogrammetric expertise and toolset to support projects of non-expert users from several different disciplines. This engagement started before digital photogrammetry and analysis tools became widely available or affordable. Jim has provided textbooks and best-practice guides for the non-expert user. He joined many teams, built bridges and paved roads across different disciplines. Jim always plays an active role in the teams he joins. He took different roles in various teams and always plays for the team, not just for personal interest. He is always helpful and supportive even though time is precious in his research life. Leaving his post at Loughborough University, he will join other teams and will, for sure, leave a personal impact.

John Fryer, who worked with Jim in Australia (resulting in the Chandler et al. (2007) paper on recording rock art), emphasises his gift for productive fieldwork (Fig. 4; RSPSoc, 2014):

> Jim was at his happiest in the field, climbing ladders, working out ways and means to simply record these sites (of Aboriginal artwork). He is extremely comfortable in the field and this combines brilliantly with his ability to "knuckle down" to do office work calculations, write reports, etc. . . . he has a rare combination of practical and theoretical skills.

Rene Wackrow, a colleague of Jim's at Loughborough University, provides an inside perspective:

> Jim has been passionate about flying gliders in his youth and has taken up this passion again a year ago. Retirement will mean he can spend much more time airborne! He also played Friday-night football with colleagues from the University and Loughborough College for over 20 years, which he enjoyed a lot. His competitiveness started at 5 pm with the first kick of the ball every week. He enjoyed camping holidays with his family all over Europe. Jim has been an enthusiastic supporter of Leicester Tigers (professional rugby club) for over 20 years, holding a season ticket for a very long time.
>
> Jim has been a fervent proponent of educating young people at university at both undergraduate and PhD levels believing that, notwithstanding the importance of research, this is the main purpose of universities.

CONCLUSIONS

Jim Chandler is the epitome of a dedicated lecturer, innovative researcher and fun personality. This Appreciation has hopefully demonstrated that his pivotal role at the interface of photogrammetry and geoscience has continued over many years. Indeed, in this issue devoted to the 2018 Virtual Geoscience Conference, Jim was a member of its Scientific Committee and is a co-author of the paper in this special issue by Parente et al. (2019), whose fieldwork returned to the Dorset coast used for Jim's PhD. Furthermore, four of the six reviewed papers in this special issue cite references including "Chandler, J. H.". He is also the co-author of three of the 10 papers (Chandler and Cooper, 1989; Chandler and Clark, 1992; Micheletti et al., 2015b) in *The Photogrammetric Record*'s new Virtual Issue on "Climate Change and Archival Photogrammetry", the details of which follow this Appreciation. This is but an indication of the reach of Jim's extensive research publications.

Following his decision to retire, Jim shared the following words with previous collaborators:

> The academic world has changed radically and after 25 years, it's time to do something different! I do have a few plans (more gliding, voluntary work, minor building activities, all combined with some consultancy and external examining). I do believe that some new opportunities will materialise, which I may or may not embrace.
>
> I also wish to thank all the individuals I have worked with over the years. I have greatly enjoyed the experience/interaction and particularly the banter! You have all helped me in some way and I feel privileged to have had a working career that has given me the opportunity to travel and work in such unusual places and on such interesting projects. I also believe that we have had some real successes, which continue to give me a real buzz!

Jim can be contacted at his new email address (JimChandler.Spatial@virginmedia.com). We wish him well in his retirement and trust his outstanding academic legacy will endure.

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NOTES

CHANDLER RETIRES FROM INTERNATIONAL EDITORIAL BOARD

IT IS WITH REGRET, but sincere appreciation for his outstanding services to this journal, that we announce that Professor Jim Chandler has resigned from *The Photogrammetric Record*'s International Editorial Board (IEB). A fuller account of the achievements of Jim Chandler, including his pivotal work in the application of photogrammetry to the geosciences, can be found in the Appreciation earlier in this issue. However, the following is a summary that highlights his exceptional work for this journal, together with that for the Remote Sensing and Photogrammetry Society (RSPSoc) and, prior to RSPSoc formation by merger, the Photogrammetric Society (PSoc).

- 1987–2019. Author or co-author of 21 papers published in the *Record*.
- 1993–2016. Author or co-author of six book reviews published in the *Record*.
- 1996–2001. Served on PSoc Council.
- 1998. Creates first electronic version of the *Record* (CD-ROM of 1995–1997 issues).
- 1999–2001. Chair of PSoc Publications Committee.
- 1999–2003. Pivotal in co-publication arrangement with Blackwell Publishing.
- 2000–2001. Photogrammetric Society Vice-President.
- 2001–2005. Served on RSPSoc Council.
- 2001–2003. Vice-Chairman of RSPSoc.
- 2002–2004. Chair of RSPSoc Publications Committee.
- 2002–2019. Member of the *Record*'s IEB.
- 2002–2010. IEB Coordinator, developing the *Record*'s peer review system.
- 2002–2010. Assisted Paul Newby in raising the *Record*'s ISI ranking.
- 2006. Final production of electronic versions of all back issues of the *Record*.
- 2006–2016. Author or co-author of six conference reports published in the *Record*.
- 2010–2017. Author or co-author of two editorials published in the *Record*.
- 2014. Receives RSPSoc Founders' Award.

The Photogrammetric Record's Cumulative Index, on the journal's homepage (https://onlinelibrary.wiley.com/journal/14779730) provides more details of Jim Chandler's publications in the *Record*.

I am sure all readers would extend their profound thanks to Jim Chandler for his hard work for, and contributions to, this journal over many years. We wish Jim the best in his well-deserved retirement. He can be contacted at:

JimChandler.Spatial@virginmedia.com

WANG ET AL. RECEIVE 2019 E. H. THOMPSON AWARD

THE E. H. THOMPSON AWARD for the most merit-worthy paper in Volume 33 (2018) of *The Photogrammetric Record* has been announced. The award is primarily made for originality