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# Preface

*The Chemical Intelligencer* (often referred to as *CI*) lasted six exciting years from 1995 through 2000. The preparation for launching it started in 1993 and Gabriela Radulescu, our sponsoring editor at Springer New York, was an enthusiastic supporter of creating the magazine. The magazine had an intriguing name, which we liked, but which we did not coin; it copied *The Mathematical Intelligencer* to which one of us had been a contributor. The word “Intelligencer” is an archaic English word; it means newsletter or newspaper. It is not known commonly and it sounds as if it could be related to some secret activities.

This misinterpretation brought us some benefit. As we learned later, the title intrigued Arnold Kramish (1923–2010) who at one time worked as a liaison of the US Atomic Energy Commission to the Central Intelligence Agency and authored a book about a spy who passed information to the Allies about the German nuclear project during the war.<sup>1</sup> Kramish connected us with Clarence Larson and his wife Jane who had built up a video interview collection with famous scientists and technologists. Clarence Larson (1909–1999) was a former Commissioner of the US Atomic Energy Commission. After Clarence’s death, Jane donated their original tapes to us, and excerpts of some of their interviews appeared in *The Chemical Intelligencer*.

Our own interviews project developed also due to the magazine. When prior to launching the publication we asked a dozen or so leading chemists about the desirability of starting such a project, the most enthusiastic support came from Linus Pauling. He only regretted that his busy schedule would not allow him to write for the magazine. We knew that Pauling was terminally ill by then. His response gave us the idea to send him a few questions to which he responded promptly. That interview, Pauling’s last, as far as we know, became the lead entry of our charter issue. Many more followed.

We interviewed famous chemists for the magazine, including Nobel laureates, but the non-Nobel laureates represented a similar level. This is so much so that several among our interviewees received the Nobel Prize following the publication of our interviews rather than before. Thus, we published interviews with the discoverers of buckminsterfullerene in 1995 and they received the award in 1996. In 1997, we communicated interviews with John Pople (award in 1998), Ahmed Zewail (award in 1999), and Dan Shechtman (award in 2011).

Our interviewing project continued for a few more years after the magazine had ceased publication. Most of our interviews, among them those that first appeared in *The Chemical Intelligencer*, were subsequently published in our six-volume *Candid Science* book series (see Appendix 1). This is why the present volume contains only two interviews (they did not appear in *Candid Science*), as a token of the interviews. Kurt Mislow’s interview is, among others, about chirality in chemistry and about chemical topology for which he had published pivotal discoveries.

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<sup>1</sup>Arnold Kramish, *The Griffin – The greatest untold espionage story of World War II* (Houghton Mifflin, 1986). Paul Rosbaud (1896–1963) was the Griffin. He was a metallurgist and a leading editor at Springer-Verlag. He rushed Hahn and Strassmann’s manuscript on the discovery of nuclear fission for publication in the German magazine *Naturwissenschaften* to inform the world about the potential danger of a German atomic bomb. During the war, Rosbaud kept informing the British of German progress in war-related research. After the war, he co-founded Pergamon Press.



*István and Magdolna Hargittai (on the left) with Zipora and Dan Shechtman in December 2011 at the Royal Swedish Academy of Sciences in Stockholm during the 2011 Nobel award celebrations (by unknown photographer).*

Speaking about personal aspects, Mislow mentioned his escape from Nazi Germany, spending a few years in Italy and England before arriving in the United States in 1940. He was grateful to Tulane University in New Orleans for generous help allowing him to get an education. It was also in New Orleans that Mislow got his first experience in racism in the United States. He was not invited to join the local chapter of Alpha Chi Sigma because he was Jewish. Not long before our conversation in 1997, Mislow checked whether this national chemical honor society had changed their rules and they had indeed: “Jewish chemists became eligible for membership in 1948. Black chemists became eligible in 1954. Women chemists became eligible in 1970. A chronology of progress, of sorts.”

Most of our interviewees opened up more to a fellow scientist than they might have to a journalist. In particular, Mislow later wrote us that he told about things that he had never discussed before, not even with his wife. When we sent back the transcripts for checking and he could have deleted whatever he wanted, he left everything intact.

Eugene Garfield is an iconic pioneer of information science. He got his first degree in chemistry; then he went on to a unique career in a field that he created mostly himself. We talked with him in 1999, and we now asked him how he looked back to what he told us in the original interview reproduced in this Volume<sup>2</sup>:

I just re-read the interview you did in 1999. That is now 15 years ago. I would not change anything in the interview. However, the influence of the journal impact factor is ever more pervasive. I wonder how often people even use databases like SCI or Web of Science for information retrieval. *Current Contents* has essentially been displaced by free contents page alerts from publishers. However, that is not the same and a lot of serendipitous connections are lost. I have to constantly remind people that the journal impact factor [JIF] should not be used to evaluate papers but at the same time, the JIF is justifiably used as a way of demonstrating the prestige of well-cited journals. Administrators and evaluators are always looking for new metrics even if they are complex and really do not understand them. So now, we have hundreds of bibliometricians churning out citation analyses and mappings.

Browsing the 24 issues of the magazine, quite a broad spectrum of topics and scientists emerge and we found the title “Culture of Chemistry” appropriate for this compilation. It does not cover everything this concept means, but all that there is is part of this culture. During the brief existence of the magazine, we constantly felt the interest and support of the community

<sup>2</sup>Eugene Garfield, e-mail message, August 28, 2014.

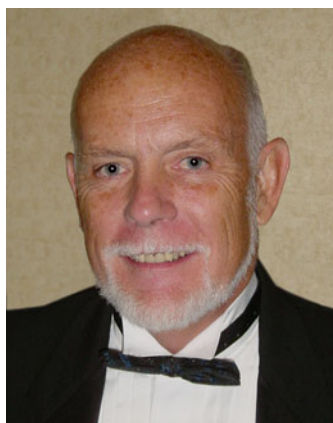
of chemists, and the sustained interest in various articles of the magazine during the ensuing years has been especially gratifying. This sustained interest was the main impetus for initiating this volume.

The arrangement of the material follows the structure of the magazine. The first half of each issue contained the so-called Departments and the second, the Articles. The Letters from the Editor-in-Chief and the Letters to the Editors will not be represented, although there were some interesting exchanges. For example, The chemistry Nobel laureate mathematician Herbert Hauptman published a paper “On the Packing of Spheres in the Regular Icosahedron” [*CI* 1(2), 26–30]. In a letter published in the next issue, the great Canadian geometer H.S.M. Coxeter pointed out a clever simplification for one of Hauptman’s expressions [*CI* 1(3), 4]. In his turn, Hauptman readily admitted that Coxeter was right.

The Departments (with department editors if there were such) included Interviews, Notes, Beautiful Molecules (Balazs Hargittai), Chemical Tourist, Cooking Chemist (Nicholas Kurti and Hervé This-Benckhard), A Chemist’s Photoalbum (Jack D. Roberts), Encounters with Chemistry (William B. Jensen), Book Reviews, and Stamp Corner (Edgar Heilbronner). The Articles follow the Departments. Within each section, the order of entries is chronological.

Of the various articles in the magazine, some had in them a certain time element. We have asked a few authors to comment on further developments although, sadly, a number of authors are no longer around; hence, we could collect such reflections on only a limited scale. The articles about the discoveries of buckminsterfullerene appeared prior to the 1996 Nobel Prize in Chemistry. The Nobel laureate discoverers have received ample exposure, but we note the premature death of Richard E. Smalley.

The watershed effect of the Nobel Prize has been amply demonstrated on the differences in the lives of scientists involved in the same award-winning field who had been honored with this award and those who were not. Thus, for example, Donald R. Huffman and Wolfgang Krätschmer could have also shared the buckminsterfullerene Nobel award, but they were not included, presumably only for the stipulation of the limited number of three awardees in any given category in any given year. On August 30, 1999, in Tucson, Arizona, Don and Wolfgang treated the two of us to a special privilege. They recreated their seminal experiment in which for the first time they had produced—rather than just observed—buckminsterfullerene.<sup>3</sup> Our pictorial account of the experiment appeared in the magazine and is reproduced in this volume.



*Richard E. Smalley (1943–2005) in 2004 in New York (photo by I. Hargittai).*

<sup>3</sup>W. Krätschmer, L. D. Lamb, K. Fostiropoulos, and D. R. Huffman, “Solid C<sub>60</sub>: a new form of carbon.” *Nature* **1990**, 347, 354–358.

We asked Don and Wolfgang for their comments on the afterlife of fullerene research and their own activities. Appendix 2 contains Wolfgang Krätschmer's and Donald R. Huffman's responses. We mention here two characteristic features of what Krätschmer had to say. One is the chemical nature of his and his colleagues' research at his nuclear physics research institute. The other is his magnanimity concerning the Nobel award for buckminsterfullerene discovery. He says that in our time most discoveries involve many scientists, and even though the Nobel Prize is given to individuals, it is a recognition of a scientific area. Huffman's activities since the fullerene discovery could be summarized, in his words, "as a reprise of earlier work if one simply replaces the phrase 'interstellar' with 'atmospheric'". Both Krätschmer and Huffman received significant awards, including the Hewlett Packard Europhysics Prize in 1994, which they shared with Harry W. Kroto and Richard E. Smalley.

We asked Kozo Kuchitsu ("Training of a Molecular Scientist, East and West") whether he would like to augment the article for the ensuing two decades. Here is what he had to say<sup>4</sup>:

Communications using electronic webs, which started shortly after the publication of this article, may confuse my question in this Epilogue, because e-mail can be used for 'a serious but silent academic discussion' for training students. In addition, we have observed in these years a remarkable increase in the long- or short-term international tours of young scientists, either from Japan or from overseas, for their joint studies and/or presentations in academic meetings. These activities should significantly affect their mentality and ambition. As for the traditional Japanese religious and cultural heritages discussed in this article, I believe firmly that they will be handed down thoughtfully in our modern society.

The time element did not play a role in Alan Mackay's reflections about J. Desmond Bernal's activities in Mackay's article, "The Lab." Nonetheless, we asked him whether he would add anything to his account. In response, he sent us information about a paper by Bernal's daughter, Jane Bernal, in which she, a physician rather than science historian or political scientist, draws an illuminating picture of her father.<sup>5</sup>

We also asked Nadrian C. Seeman whether he wished to add anything to his paper "Molecular Craftwork with DNA." His article concerned a fast-developing field. His response was, "The article is largely still correct, although we have made a lot of advances in the last 20 years. Thus, we are no longer limited to topological characterization."<sup>6</sup> His more detailed response is reproduced in Appendix 3. As pioneer of DNA nanoscience, Seeman has been recognized with a host of prestigious awards and prizes of which we mention only one: "Nadrian Seeman is recognized with the Kavli Prize in Nanoscience, for inventing DNA nanotechnology, for pioneering the use of DNA as a nonbiological programmable material for a countless number of devices that self-assemble, walk, compute, and catalyze".<sup>7</sup>

The late Mordecai Rubin wrote a captivating article about the Wall of Fame in the Schulich chemistry department of the Technion—Israel Institute of Technology. We have asked Distinguished Professor and President Emeritus of the Technion Yitzhak Apeloig about further development since Rubin's 1997 account<sup>8</sup>:

Since the death of David Ginsburg (1988), the founder of the Wall of Fame, only names of Nobel laureates in chemistry were added to the Wall. To accommodate the new names, the sidewalls of the auditorium were also used. Now these walls are also covered with nameplates and for the time being we have stopped adding new names. Until 2004, there were no names of Israeli chemists on the Wall (although several may have qualified), because according to the "Wall rules" Israelis can be included only if they win the Nobel Prize. Happily, this situation changed dramatically in the 21st century when we proudly added FOUR Israeli Nobel laureates; THREE of them from the Technion: Avram Hershko and Aaron Ciechanover (2004); Dan Shechtman (2011); and Ada Yonath (2009) from the Weizmann Institute of

<sup>4</sup>Kozo Kuchitsu, e-mail message, August 25, 2014.

<sup>5</sup>Jane Bernal, "J. D. Bernal," *LLULL: boletín de la Sociedad Española de Historia de las Ciencias* **2001**, 24, 605–628 (the article is in English with an Abstract in Spanish and English).

<sup>6</sup>Nadrian C. Seeman, e-mail message, August 26, 2014

<sup>7</sup><http://www.kavliprize.org/prizes-and-laureates/prizes/2010-kavli-prize-laureates-nanoscience> (accessed September 4, 2014). The Kavli Prize recognizes scientists internationally in astrophysics, nanoscience, and neuroscience.

<sup>8</sup>Yitzak Apeloig, e-mail message, September 6, 2014.

Science. The names of two more Israeli chemists who won the Nobel Prize, Arieh Warshel (a Technion graduate) and Michael Levitt (2013) will be added to the Wall soon. With this impressive achievement for a small country like Israel, it seems that David Ginsburg's dream to see names of Israeli Nobel laureates on the Wall of Fame has been fulfilled.

We would have thought that hardly anything could be added to Bart Kahr's article "Gibbs and Amistad," but this was not the case.<sup>9</sup> Recently at least three studies have appeared in the most diverse venues, such as *Modernism/Modernity*,<sup>10</sup> the *Journal of Narrative Theory*,<sup>11</sup> and the *Journal of Statistical Physics*.<sup>12</sup> They give us the impression that Kahr's paper in our magazine was quite pioneering.<sup>13</sup>

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Looking back to the time we spent with the magazine, we remember with gratitude the contributions of the Editorial Board members, especially Lennart Eberson<sup>14</sup> (1933–2000), Roald Hoffmann, William B. Jensen, George B. Kauffman, Harold W. Kroto, Nicholas Kurti (1908–1998), Torvard C. Laurent<sup>15</sup> (1930–2009), Jean-Marie Lehn, George A. Olah, Guy Ourisson (1926–2006), Lev V. Vilkov (1931–2010), and Ahmed H. Zewail. We express heartfelt thanks to Madeline R. Kramer, then at Springer, who was responsible for the production of the magazine to which she was very much dedicated. We also appreciate our current Publishing Editor Sonia Ojo's support for bringing out this volume and Production Editor Karin de Bie's dedicated and expert efforts in making it happen.

It is our pleasure to mention the multifaceted assistance in and the encouragement for the present project we have received from Magdolna Hargittai. Being not only her professional colleague, but also her son (BH) and her husband (IH), we strive to manifest activities worthy of her expectations of us.

Loretto, PA, USA  
Budapest, Hungary  
Spring 2015

Balazs Hargittai  
István Hargittai

<sup>9</sup>Bart Kahr, e-mail message, September 4, 2014.

<sup>10</sup>Eben Wood, "The Private Lives of Systems: Rukeyser, Hayden, Middle Passage," *Modernism/Modernity* **2010**, 17(1), 201–222.

<sup>11</sup>Stefania Heim, "'Another Form of Life': Muriel Rukeyser, Willard Gibbs, and Analogy," *Journal of Narrative Theory* **2013**, 43(3), 357–383.

<sup>12</sup>Leo P. Kadanoff, "Reflections on Gibbs: From Statistical Physics to the Amistad V3.0," *Journal of Statistical Physics* **2014**, 156, 1–9.

<sup>13</sup>We thank Bart Kahr for the quoted References.

<sup>14</sup>At the time, Eberson chaired the Nobel Prize Committee for Chemistry.

<sup>15</sup>At the time, Laurent chaired the Board of the Nobel Foundation.

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