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My Friend and Colleague Richard Schelp

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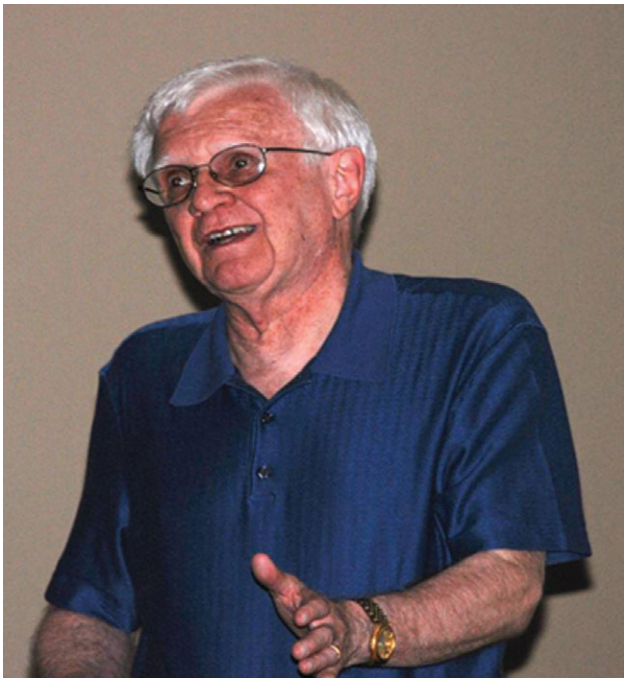
My Friend and Colleague, Richard Schelp



Richard H. Schelp
1936–2010

Richard Schelp completed his PhD in lattice theory in 1970 at Kansas State University. However, he did not take a traditional route to a PhD in mathematics and an outstanding career as a professor and a mathematical researcher. He grew up in rural northeast Missouri. He received his BS in mathematics and physics from the University of Central Missouri. After the completion of his master's degree in mathematics from Kansas State University, he assumed a position as an associate mathematician in the Applied Science Laboratory at Johns Hopkins University for five years. To start his PhD programme at Kansas State University, he had to quit a well-paying position. Also, he was already married to his wife Billie (Swopes) Schelp and he had a family – a daughter Lisa and a son Rick. This was a courageous step to take, but it says something about who Dick Schelp was.

Richard Schelp accepted his first faculty position in the Department of Mathematical Sciences at Memphis State University in 1970 after completion of his PhD. He arrived the same year as three young colleagues: John Haddock, Jim Jamison and Cecil Rousseau.

This group bonded quickly because of common backgrounds and similar professional interests, and their young families also became good friends. These young faculty members became key players in initiating significant changes that shaped the culture of the Department of Mathematical Sciences. They provided significant leadership as the research activity of the Department increased and a PhD programme was initiated. These were the first steps that led to Stan Franklin, from Carnegie Mellon University, becoming Chair, and eventually led to Paul Erdős becoming a regular visiting researcher to the Department of Mathematical Sciences, and to Béla Bollobás assuming the Jabie and Helen Hardin Chair of Excellence in Combinatorics.

Schelp, Haddock, Rousseau and Jamison.

I first met Dick Schelp in 1971 at a National Winter Meeting of the American Mathematical Society. From that very first meeting he was a very welcoming and open individual, but also a person who was very straightforward, and you always knew where he stood – a person who was a great colleague. Upon my arrival at Memphis State University in the Fall of 1971, I joined Dick and Cecil Rousseau to consider research problems in graph theory. Dick along with Cecil, a mathematical physicist, had already found a common interest in graph theory and started working together, and now I joined them with a mathematical background as a group theorist. Dick was the initiator of this collaboration, which resulted in an active research agenda in graph theory for forty years.

On the graph theory research front, things happened quickly for Dick. He co-authored three graph theory papers that appeared in 1973, which were the first of 43 joint papers with colleagues Rousseau and me. Also, one of the early papers was a solution to an Erdős–Bondy problem on Ramsey numbers for cycles. Erdős and Bondy [3] had shown that the Ramsey number $r(C_n, C_n) = 2n - 1$ for odd $n \geqslant 5$, and posed the question about the Ramsey numbers $r(C_n, C_m)$ for all possible cycle lengths n and m. A solution was presented in the paper [8], of which Dick was a co-author. As a result of this, interaction with Paul Erdős started in 1972.

The events that led to the collaboration are interesting. Mike Plummer and Bob Hemminger invited Dick, Cecil and me to attend a lecture of Paul Erdős at Vanderbilt

University in Nashville. We drove to Nashville, met him for the first time, and heard his lecture on problems in graph theory. That evening we were invited to a party at the home of Bob Hemminger. At that event, the manuscript that led to the paper [8] was given to Paul. He went into another room with the manuscript, and after some time he reappeared and said, 'Maybe I could come to Memphis and we could work on some problems.' To say we were happy is a vast understatement: we were ecstatic. This was the start of a collaboration that had a tremendous impact on the career of Dick Schelp and his friends.

When Paul came to town the working pattern changed dramatically for Dick and his colleagues. During the day there was non-stop work at the office with a continuous flow of mathematicians in and out. Normally, there would be one break in the afternoon for some table tennis. Paul was an intense competitor, and it was also clear that no one in the group liked to lose even at table tennis. However, Dick was probably the most vocal in expressing his pain. At night, the mathematical action moved to one of our homes, and it was most common for these sessions to still be active when midnight arrived. The real test of one's endurance was when there was a gentle knock on your bedroom door at 6:30 the next morning with the query 'Do you exist?' It was interesting to observe the accommodations made for the interests and working habits of this group. For example, Dick was an avid basketball fan, and Memphis State University had some great teams during this period. Prior to one of the International Conferences on Graph Theory and its Applications in Kalamazoo, Michigan, there was a basketball game that Dick absolutely could not miss. So we left after the game to drive the 700 miles to Kalamazoo overnight. The car dome light was on so Paul could continue to be active. The pace sounds stressful, but they were good times for us all.

Schelp, Faudree, Rousseau and Erdős.

The picture above reflects a not uncommon situation. Paul Erdős liked fresh air in any room that he occupied, independent of whether it was a working room or a sleeping room. Unfortunately the mathematics building at Memphis State University was a hermetically sealed building with no windows that could be opened, and Paul consistently complained of this condition. Thus, it was not uncommon to work outside. During one of Paul's visits a student accidentally fell into one of the huge glass panels in the hall near our offices and shattered the panel. Paul, Dick, and I were together when we first observed the destroyed

panel, and I don't think I ever heard Dick laugh louder than when Paul remarked, 'I see someone has finally rebelled against this sealed building.'

As a result of the interaction with Paul Erdős and with his encouragement, Dick attended the International Conference in Keszthely, Hungary in 1973 to celebrate Paul's 60th birthday. As a result of this visit Dick developed relationships with Hungarian mathematicians such as András Gyárfás and Jenő Lehel. The next year, Erdős started his regular visits to Memphis State University, and by 1975 Dick's Erdős number was 1 as a result of a four-author paper: Erdős, Faudree, Rousseau and Schelp [6], 'Generalized Ramsey theory for multiple colors'. This was the first of 42 papers that Dick co-authored with Paul Erdős along with others.

Dick enjoyed working with other mathematicians and he actively encouraged mathematicians to visit the department; many of them would even stay in his house while visiting. As a regular visitor Erdős also brought many active researchers to the campus of Memphis State University. Those early years were just the start of a very productive research career for Dick, resulting in more than 165 papers in graph theory with over 50 different co-authors. Most of his research with collaborators and students centred around extremal graph theory: Ramsey theory and Hamiltonian theory of graphs, and problems on paths and cycles in graphs.

Dick Schelp, Stefan Burr, Paul Erdős and Ralph Faudree.

The picture above was taken on the banks of the Mississippi on a trip by car to Baton Rouge, Louisiana, to attend a Southeastern Conference on Combinatorics, Graph Theory, and Computing. The trip started normally, with Paul Erdős sitting in the front seat with pad in hand (visible in the picture), leading a lively mathematical discussion with Dick, Stefan and me on research problems considered in the preceding days. To break the journey, we stopped in Natchez, Mississippi, and continued our mathematical conversation as we walked along the banks of the Mississippi. We were eventually blocked by a chain link fence. Our choices were to either retrace our steps, or jump the fence. Paul, being a person who accepts any challenge, insisted that we should jump the fence

and that he was up to the task. He proceeded, got partially over, and then paused while sitting on top of the fence. The leap from the fence brought a loud sound of tearing cloth. When Paul raised his coat tail to enquire of Dick if he had, in fact, ripped his pants, even a gentleman like Dick could not resist a polite laugh as he confirmed the considerable damage. When questioned about other clothing, Paul was clear that there was no substitute: what he had on was it. Paul was well known for carrying all of his belongings in two small, partly filled suitcases, and for his statement 'personal items are a hindrance to work'. Dick and others assured Paul that Brooks Reid at the conference would be able to arrange for repairs on the pants when we arrived at the conference in Baton Rouge. On arrival, Paul went immediately to his room, and returned to the lobby to let us know there was no problem: his coat covered the damage. However, appropriate repairs were made. The next day as the four of us headed for lunch near the campus, Paul started down a small alley. Dick advised Paul that we could not get through that alley, since there was a fence at the end that would block our path. Paul stopped dead still, and with a slight grin said, 'There is an old Hungarian proverb that one never mentions rope in the home of a man that has just been hanged.'

One clear indication of the large flow of mathematicians through the University of Memphis (formerly Memphis State University) that Dick Schelp worked with is the existence of a seven-author paper by Burr, Erdős, Faudree, Gould, Jacobson, Rousseau and Schelp [4]. All of these authors were in Memphis at the same time in the mid-1980s. Also, this was not the only time that the group was collectively present. Dick had long-term working relations with a number of researchers. With Stefan Burr and other co-authors there were 16 papers dealing with generalized Ramsey theory, and many of these were initiated when Burr and Erdős were both in Memphis. There was a series of papers dealing with cycles and paths in graphs and Hamiltonian graphs with Ron Gould and Mike Jacobson. An example of this is the paper [7] dealing with neighbourhood unions and Hamiltonian cycles.

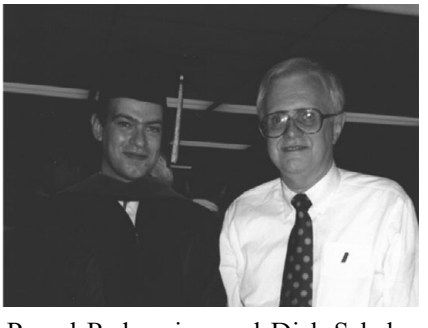
Burr, Gould, Jacobson, Erdős, Rousseau, Faudree and Schelp.

The time Dick spent in Hungary was a very important element in his mathematical career, and of course, Paul Erdős played a critical role in those arrangements. Both Dick and I observed that Paul was most careful to see that his friends in Budapest were prepared to assist us, that all the necessary arrangements were being made, and he continued to

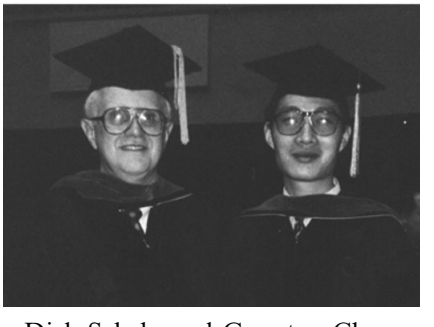
check on us while we were in Budapest even though he himself was sometimes not there. This contradicts the many articles and books about Paul that imply he was a man entirely engrossed in mathematics, with little attention to anything else. Therefore, in addition to Erdős, Dick also established a strong connection with mathematicians in Hungary by spending sabbatical semesters there, attending many conferences in Hungary, and by hosting Hungarian mathematicians as visiting professors at the University of Memphis. Two of the co-authors with whom he wrote many papers were András Gyárfás, who was a Visiting Professor at the University of Memphis at several different times, and Jenő Lehel, who visited the department and later became a permanent member of the faculty. Several of these papers dealt with colourings of graphs, such as [9]. There were several other collaborators from Hungary, such as Miklós Simonovits, Vera Sós, Ervin Győri, and Zsolt Tuza, who published papers dealing with various aspects of extremal graph theory.

Jenő Lehel, Dick Schelp and András Gyárfás.

Dick gave special attention to his students, and was generous with his time in working and listening to them. Also, he continued to work with them after they assumed positions at other universities. Dick had many joint papers with his doctoral student Guantao Chen in several areas of graph theory; one example is the Ramsey paper [5]. One of his students, Pascal Bedrossian, created new interest in forbidden subgraph conditions that imply Hamiltonian properties, by giving a characterization of such pairs of graphs in his thesis [2].



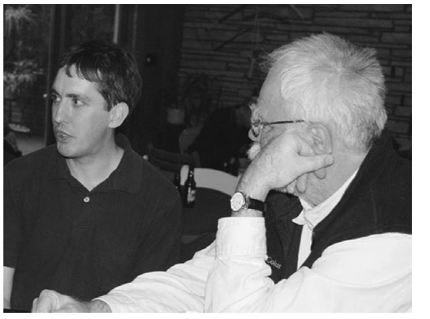
Pascal Bedrossian and Dick Schelp.



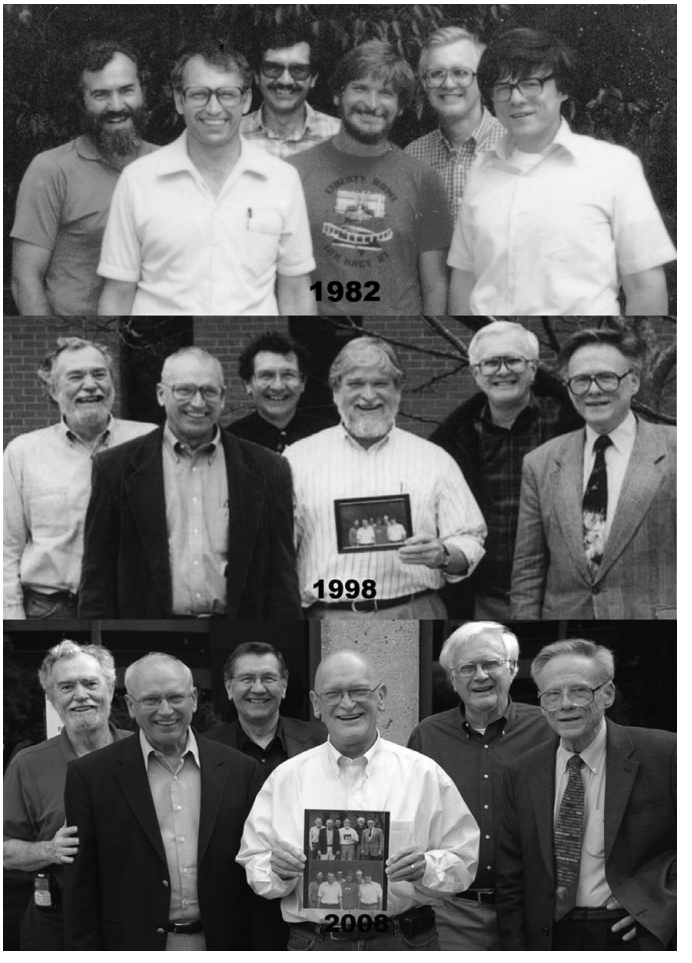
Dick Schelp and Guantao Chen.

One clear indication of Dick's passion for doing mathematics is his research activity after he retired. He continued to be active and worked with collaborators in the department

Vlado Nikiforov and Béla Bollobás.



Paul Balister and Jenő Lehel.



Faudree, Fleming, Haddock, Jamison, Schelp and Rousseau.

including Paul Balister, Béla Bollobás, Jenő Lehel, and Vladimir Nikiforov. One example is a paper on cycles in graphs [1]. In fact he published more than 35 papers after his retirement in 2001, and he was an invited speaker at the Cracow Conference on Graph Theory in Poland in September of 2011 just prior to his death.

His outstanding contributions to the teaching and research mission of the University of Memphis have been recognized. He received the College of Arts and Sciences Meritorious Faculty Award, which is that college's highest award. At the University level his awards include the University Faculty Research Award, and the most prestigious award of the University: the Willard Sparks Eminent Faculty Award.

Dick's first love and top priority was his family and their relationship to their church. Mathematics was certainly placed high in Dick's list of passions, and he also placed great value on his relationships with his colleagues. These friendships went well beyond the mathematical exchanges. In winter there were Friday afternoon basketball games with his colleagues, playing against the graduate students. In summer there were long bike rides with those same friends. The competitive nature of Dick and his colleagues was most obvious in these activities, but over a period of nearly 40 years, bonds of support and friendship were built not only between these six mathematicians but also between their families.

It would be inappropriate not to point out that driving a red Corvette was far from the bottom of his list of passions. All of his friends concluded that he become much healthier after the purchase of the red Corvette, since it considerably increased the distance he walked. He had to park in the far corner of the parking lot at some distance from where other faculty parked, since, to quote Dick, 'Faculty members, especially math faculty, drive old cars and are not careful when they open their car doors and will ding adjacent cars.' His car had no dings. Dick's interest in cars and his pride in all the great deals he got on cars he purchased brought considerable teasing and pranks from his close friends. These pranks ranged from pouring old oil under the oil pan of a just purchased pre-owned car, to placing pizza delivery signs on a nicer new vehicle.

Dick's Corvette.

I cherish our years of friendship, I value our collaboration in 95 graph theory publications, and I miss him immensely.

Ralph J. Faudree, University of Memphis, USA

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