

A PHYSICS AND TRIGONOMETRY SCORE FROM THE ROOF OF SCIENCE HALL

By David Dupree

Occasionally, life draws upon prior experience that enables the humor of the moment.

I grew up immersed in baseball—what seems on reflection decades later to have been constant neighborhood play, Little League competition, junior high varsity left field play, and family devotion to the Baltimore Orioles, pinnacled by their 1966 World Series win.

From that immersion, I amassed the muscle memory of the mechanics of throwing fast and far. Science classes in school made it clear that execution of plays on a baseball field applied physics (mass, inertia, force, etc.) and trigonometry (line, arc, distance, intercept points, etc.). But players do not experience such play as math and physics. Players learn by doing, by applying experience with specific situations and actions on the field, supported by accumulated throwing-and-catching muscle memory. Coaches reinforce such learning by drilling into young heads the “horse sense” of decision making during competitive play: *“Throw to the base ahead of the runner, and throw to the bag ahead of the tag!”*

Several years later, at college, I found myself much closer to physics and trigonometry, quite removed from the horse sense of play on a baseball field. In my college sophomore year, the science majors around me plus the seriousness of the college’s Science Hall contrasted greatly from my baseball playing past.

Volunteering to help manage the Experimental Psychology Department’s Rat Laboratory for the care and feeding of 20 rats used in behavioral learning research, plus a professor’s encouragement to use the lab as a place for isolated study, provided privacy for

focusing on the required reading, test preparation, and written assignments for getting the most out of college.

Three chemistry majors had access to the Chemistry Department's laboratory near the Rat Lab. They too took advantage of their access by using the laboratory as well as nearby Science Hall classrooms for nighttime study. And although equally committed to study, we differed in ways as different as my baseball past seemed from the moment and place.

My peers in the chem lab seemed to have no prior background in sports, thus no accumulated muscle memory from bringing physics and trigonometry to sport and play. Apparently inspired by their envisioned careers as research scientists or chemists, they seemed to embrace the accompanying stereotype that eccentricity would distinguish them.

As a trio, the "Chem Lab Three" seemed to pride themselves in their imaginative use of their access to the labs and Science Hall's nearby classrooms, particularly in their own form of sport and play as breaks from study. They competed in staring contests, games of chalk-board-eraser shuffleboard on a recently buffer-polished hallway tile floor. These were tame in comparison to their most extreme variant that involved challenging each other to study for at least 30 minutes in or on classroom desk-chairs after tossing and spinning them to bounce, crash and settle in open floor spaces. They would attempt positioning themselves for studying based on how the desk-chairs landed, often on a side or occasionally upside-down, with each contestant positioned in or on top off his own tossed chair.



From inside the Rat Lab studying, I knew of the occurrences of this

extreme study-sport of the Chem Lab Three by the loud crashing of the desk-chairs, the laughter, and the groans of the resulting thirty-minute challenge.

I and the Chem Lab Three connected at times as I returned to the Rat Lab from a bathroom break. They would, for example, pause to point out to me that one of them had just set the record of 45 minutes of organic chemistry study compressed under an upside-down tossed desk-chair.

Once I joined them on a snack trip for *Jack in the Box* tacos, since one of them convinced the others that the hot sauce promoted brain blood flow and better retention from study.

Other than brief hallway exchanges of greetings and the one occasion of the *Jack in the Box* taco run, we would see each other nightly, but we studied in our own way. I continued to keep the Rat Lab closed to ensure isolated study—week after week of each of three full years of college classes and study. By the second year, my girlfriend, political science major (eventual wife) joined me in the study sessions—even more reason for closed-door isolation. She also grew familiar with the quirky habits of our evening Science Hall chem major peers.

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One night as the end of one college year approached, the night time routine changed significantly. During a couple of hours of study in the Rat Lab, silence in the nearby chem lab and classrooms suggested the absence of the Chem Lab Three. Yet around 9:30 p.m., I suddenly sensed excited energy from the chem lab. I stepped into the hallway from the Rat Lab and saw the Chem Lab Three at a sink filling water balloons.

After each of them filled one or two colorful balloons with water, they walked

quickly down a hallway that headed toward a door I had never seen opened before. I heard one say “*Quick, it’s almost 10:00!*”

They used a key that opened the door, which revealed a stairway leading to the roof of Science Hall. They left the door open. My girlfriend had joined me in stepping from the Rat Lab to see the Chem Lab Three carrying water balloons as they disappeared up the stairway. I quietly whispered to her that I was curious to learn what they were doing as I left to follow them. She stayed behind watching me with index finger to lips, suggesting silence.

After climbing the stairs and stepping onto the flat roof, I found the three of them very visibly at the roof’s edge, silhouetted by nearby parking lot lights. The nearest of them held a purple water balloon in his left hand with arm extended a bit as if he might be preparing to throw, but paused.

They were looking over the parking lot about 40 meters offset from Science Hall, separated by a grass lawn. Each seemed focused on something in the parking lot.

I quietly stepped forward, still behind them, and still undetected by them. I could see a campus security guard walking across the parking lot approaching the end of the lot closest to Science Hall.

The guard walked parallel to the building and approached an area well illuminated by the overhead parking lot lights and at a location still fairly far away from the intended water balloon tossers on the roof of the three-floor Science Hall.

It quickly became evident to me that they were discussing the physics and trigonometry of the throw, something none of them likely ever did before—about a 50-yard toss of a water balloon from a significant height over a significant distance.

I realized that the situation was suddenly “baseball” to me. I also recognized that my chem lab peers were about to miss the moment or would, through trying, seriously embarrass themselves in failure (throwing short).

Light from the parking lot passed through the nearby left hander’s somewhat large purple water balloon and gleamed brightly. I stepped forward, grabbed it from the lefty chem major, felt the weight to be about size of a softball with the one-pound weight of a football. Grasping the balloon somewhat tightly, I quickly turned my shoulders and reared my arm back in what I knew had to be a long-distance, outfielder’s throwing motion. I then stepped close to the roof’s edge to put my weight into the throw, launched the balloon high and long above and toward the lit area of the parking lot that the guard would step into within four seconds. I recalled my junior high varsity baseball coach barking instructions “*Your target is the base where he’s heading, not the guy!*”

I stepped back and glanced at the Chem Lab Three and was startled by their bright-eyes wonder and enthusiasm as they stood at the roof’s edge. They tracked the high and long throw as the security guard stepped into the lighted space targeted by the descending water balloon in flight.

Their hands and arms were outstretched as if they were excited baseball fans rising from the delight of a home team hitting a home run.

I sensed the toss was true and then saw the impact four feet in front of the security guard with a spray of water and a very audible “*splat!*” Horse sense suggested “*Get out of sight now. The guard will easily see everyone on the roof!*”

I stepped back into darkness toward the stairway and, glancing back, saw the Chem Lab Three still at roof’s edge, visibly excited and clapping each other on their backs,

celebrating the moment.

I quickly descended the stairs, returned to the Rat Lab, closed the door, told my girlfriend what had just happened while anticipating what would occur next.

Within a minute I heard several feet running and a couple of doors slamming. Within five minutes, I heard louder footsteps and voices, followed by keys jingling, a door opening, then loud verbal exchanges and, shortly after, the sound of a small group of people moving down the hallway, accompanied by one voice commanding, “*Let’s go, come on, move it!*” and then silence.

After waiting a few minutes and pausing to learn if anyone heard my girlfriend and me loudly laughing, I opened the Rat Lab door and peered in the locked chem lab door window and noticed that the un-curtained windows must have made the Chem Lab Three very visible to the Security Guard from the parking lot as the three ran into the lit room after scurrying down from the roof.

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Word spread among the Science majors the next day that the Chem Lab Three had scored a water balloon direct hit on a parking lot security patrol from the great heights of the Science Hall roof.

They had become immediate physics and trigonometry celebrities throughout Science Hall. The news also celebrated how, when hauled off to the “brig” (campus Security Office), they had “*Pulled a Spartacus*¹” with each claiming to have thrown the water balloon.

The greater crime, of course, was their presence on the roof, which revealed their use

¹ “*Pulled a Spartacus*” refers to the 73 – 71 BC slave uprising in current-day southern Italy against the Roman Republic led by former gladiator slave, Spartacus. In the popular 1960 movie with Kirk Douglas as Spartacus, once defeated by the Roman Legion, each of the few surviving prior slave rebels stood with pride as answer to the question “Who of you is Spartacus?” and each proudly proclaimed, “*I am Spartacus!*”

of a Science Hall master door key—different from my Rat Lab door key—that was college property never shared with students.

Also, the parking lot security guard quickly identified them as the excited gawkers on Science Hall’s roof immediately following the splash of the water balloon.

The Chem Lab Three embellished how campus Security had fingered them as the water balloon tosser by describing how they were identified from a lineup of the known, most raucous fraternity guys—adding to their devil-be-damned accomplishment.

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A couple nights after the “*water balloon physics and trigonometry score,*” the Chem Lab Three knocked on the Rat Lab door and invited me and my girlfriend to join them on a *Jack in the Box* taco run, indicating they were buying and noted “*Because the hot sauce stimulates brain blood flow to help you study.*”



As it appeared in 2019, the three-floor Science Hall (now Science and Technology Center) of Rider University, Lawrenceville, New Jersey.