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Zen and the Art of Surgery: How to Make Johnny a Surgeon

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Thank you for that very generous and kind introduction.

I first want to thank a few people. My first real brush with leadership was in a parking lot in Orlando. My former boss, Bing Rikkers, was walking out of the Specialist Schools and Academies Trust (SSAT) reception in the wild animal park with my oldest son and I. Bing told me that he had a job he thought that I would enjoy. He thrust me into developing the program for this organization. He has done that for several other equally difficult, time consuming, but incredibly rewarding jobs (all of which seemed like a bit of a stretch for me). He also asked me to run our residency program which has been the source of the greatest rewards in my academic life. I will forever be grateful that he chose to come to me in Wisconsin. I hope everyone, especially the residents in the audience, can find someone like Bing that pushes you out of your comfort zone.

Second, I would like to thank Barbara Bass. Barbara, for no reason, took me under her wing. I really have no idea why she “tapped” me. There was no particular benefit to her. She introduced me to some of my closest friends and included me in events she certainly did not need to. She has been a source of advice and inspiration since the day I met her.

Last, my wife Chris who asked me not to mention that she is here. She has been there in good times and in bad, and she constantly inspires me to follow her lead and do the right thing.

So what do I talk about in a completely undefined talk? I thought initially that I would talk about research advances in gastrointestinal (GI) cancer. I then thought, maybe, I would talk about medical device development. This has both been a great scientific interest and a fun way to train students.

Bing has given some spectacular talks on leadership, which I have found really interesting. Health care reform and how to finance a surgical practice has been the focus of my academic life the last couple of years. Bing and one of my best friends, Tom Zdeblick, suggested that this should come from the heart. When I thought about it, the thing that I am most passionate about is training surgeons. The thing that has consistently given me the most academic pleasure is watching a resident or a new faculty member “get it”, and then succeed. The system seems to be working. Every year the people we see get smarter, but our residents do not feel competent when they finish. Five years and they are not comfortable.

Frank Lewis, the director of the American Board of Surgery (ABS), recently outlined the issues facing American surgery in the clearest terms I have seen. He acknowledged that the majority of surgical residents are seeking further training. They are doing this for many reasons, but most relevant for this discussion, many do not feel like they have the skills to independently treat surgical patients. This is reflected both in the increase in fellowship training and in the worrisome rise in the failure rate of the ABS certifying exam.²

Dr. Lewis concluded that we should consider earlier specialization in general surgery. This has already been done with great success in vascular surgery. Early specialization means that specialty training is interspersed with general surgery training, with the last 18 months or so devoted to the specialty. In vascular surgery, the first 3 years are typically devoted to general surgery, the last two to vascular. The middle year is split about evenly. There are, of course, lots of details that will need to be worked out. These issues should not stop us from pursuing this course. The other option is to leave our system alone and let the market set the training. This, to me at least, means we are evading our responsibility. I think we can do better, but we need to change the way we do business. We need to do it for our trainees and for our patients. First, why is this important?

This is Gonzalo Gasca (Fig. 1). Mr. Gasca is a patient of mine. He, unfortunately, had pancreatic cancer. Mr. Gasca was in his 70s and retired after he raised his family. He did not sit around the house after he retired, but began living to work. He was one of the guys at Wrigley Field that points you to your seats (per the HIPPA guys, I cleared this with his wife). I have trouble imagining a better job.

He was treated preoperatively with chemoradiation, and after a long stretch in the OR we discovered that we were going to leave the tumor behind and had to abandon the procedure. The next morning, with some trepidation, I went to talk to him. I sat down next to his bed and told him that we left the tumor and that there was not much more that we could do. His response was, "You look like this is bothering you a lot. You did your best. I know it. That's how life goes. You need to stop thinking about this or you won't be able to focus on the next guy." He then sent me on my way. He died a couple of months later. His wife sent me a thank you note. One of the interesting things about speeches like this is that you can intersperse little parables to illustrate points like this story of Mr. Gasca.

A small boy was walking along a beach at low tide, where countless thousands of small sea creatures, having been washed up, were stranded and doomed to perish. A man watched as the boy picked up individual creatures and took them back into the water. "I can see you're being very kind," said the watching man, "But there must be a million of them; it can't possibly make any difference." Returning from the water's edge, the boy said, "It will for that one."

Sometimes we lose sight that, ultimately, we are training surgeons to take care of people. Individual people like Mr. Gasca. Now, we are initially training surgeons to be good at hundreds of diseases and masters of none. We should be training them to walk out of that patient's room and know that they did their best and that their best was exactly what that patient needed.

So why did this guy trust me? I suggest it is because he thought I was an expert, not that I was the best surgeon in the world or the US or Chicago, but an expert. The first question every patient asks me is: How many of these have you done? Patients know intuitively that, though volume does not equal quality, it matters, but we are not training experts in general surgery. We are not training experts in GI surgery except in a few fellowships. We are training good and competent surgeons and hoping that these really smart people will become experts.

I would like to suggest that we need to change our focus to training experts, not good surgeons, but experts in the management of GI diseases. We need to develop experts who will get better and better over their career. As other parts of *general surgery* have developed their own focus, we have retained what I consider the best part and the core of surgery—the GI tract. This core of GI surgery is markedly different than GI surgery 20 years ago. The knowledge base has expanded, most GI diseases are not approached with a big incision and most of the diseases we treat are done as teams, not as individuals. We have trained really good surgeons more and more broadly. As GI surgery has become more focused on minimal access, we have had to train for twice as many procedures. We can keep doing this and let others “finish them”, or we can try to change the way we do this. So how do we deliver quality to our customer—the patient?

We are now finishing residents, competent to do a few procedures—laparoscopic cholecystectomy, hernia repair, perhaps right colectomy—but what else are they really trained to do? The world shifted while we were not watching. I know you have all heard the phrase “just a general surgeon”. We have always answered the “just a general surgeon” question with an eye roll, those guys do not understand what we do. My thought is: Those guys may be right. I am not sure, but they might be right. I propose that we need to train experts and focus on quality. I propose that we need to train experts, not just good surgeons.

Before we develop experts, we need to develop competence. Dick Bell gave a great talk at the Central Surgical last year entitled: *Why Johnny Cannot Operate*. I stole part of his title. He showed sobering data that of the 121 essential operations only ten were performed more than 20 times by the average resident. Eighty-three were performed less than five times. Nothing obscure here, these are essential procedures.³ Dr. Bell suggested that we rethink what it means to be competent. Many essential procedures are being performed once or not at all. How can we be competent at something we have never done?

Let me highlight the average number of cases performed by our US graduating chief residents for three GI procedures: trans-anal excision of a rectal tumor, zero; bile duct exploration, one; vagotomy, zero. The surgeons we are finishing are not competent to do these operations, but maybe performing 80 laparoscopic cholecystectomies translates into competence in other GI diseases? Overwhelmingly, the evidence is no. This is clear not just in surgery but in almost any technical field. An expert pianist is not also an expert violinist.

Maybe a bowel anastomosis, though, is a bowel anastomosis, but a colectomy and an esophagectomy are not just anastomoses. If you have never done a sigmoid colectomy, no number of esophagectomies is going to teach you how to avoid injury to the ureter.

Experts tend to see patterns that become more complex as they develop expertise. They recognize when something does not fit this pattern. An expert surgeon knows when something is wrong. They, perhaps, cannot verbalize it, but the pattern is wrong. They recognize that they need to slow down when something is not right.⁴ The answer, thus, is NO. Eighty laparoscopic cholecystectomies do generate expertise for laparoscopic cholecystectomies but not for colon resection. So, we are not really training surgeons for competence in the breadth of GI diseases.

Can I take this argument a step further and suggest we develop experts in a smaller piece of surgery? *But*, and this is a big but, to become an expert requires 10,000 h of deliberate practice over an extended period of time.⁵ It does not matter what task you pick—sports, music, chess. Ten thousand hours in one thing. Ten thousand hours of violin practice, not music practice. Does 10,000 h managing pancreatic cancer make one an expert in the management of rectal cancer? Our “general surgery” paradigm says yes. The public, the

residents, and the data on survival of patients with GI cancer and surgical groups and academic departments say no.

So what is deliberate practice? It has three components—it must be beyond your current level of performance, there must be feedback, and you must be doing it not because you are required, but for its own reward.

It is easy to imagine feedback in surgery—anastomoses leak, patients die, during our training, the experts critique our performance. In chess, a grand master typically spends 4 h a day evaluating the moves of experts in other matches. An expert pianist practices alone, 4 h per day. An athlete competes with other elite athletes, but how does all this apply to the development of expert surgeons? Can we train an expert or even a competent general surgeon in our current 5-year training programs? Do our residents really spend 4 h a day in deliberate practice? At that rate, it will take 10 years for them to become an expert, but, and this is another big but, they need to continue deliberate practice for longer than we are training them. Anders Ericsson has written extensively on this topic. He presents many examples from medicine, all with basically the same outcome. Residents are better than medical students at almost any task tested, for instance, detecting an abnormality in heart sounds. Cardiologists are better still. After 10 years in practice, cardiologists remain just as good. The general practitioner, however, is not as good as the medical student (Fig. 2).

I propose that, to develop expertise, the focus has to be narrower than general surgery and maybe more narrow than GI surgery. This can obviously be taken to an extreme, experts in only right colon diverticulitis or something equally ridiculous. Broadly trained GI surgeons able to deal with GI emergencies and trauma are essential. We also need broadly trained surgeons to deal with access to care in the rural parts of the US. There will clearly be other paths to competence in general surgery—critical care, rural surgery, trauma, surgical oncology, etc.

I serve on the GI surgery advisory committee of the American Board of Surgery led by Ken Sharp which has taken on the task of restructuring GI surgery. Though I do not speak for the board, what I propose has broad support, and a consensus for GI surgery has developed.

If we took this broadly trained GI surgeon after 3 or 4 years and then focused their training in either colorectal disease, pancreatic/biliary/hepatic disease or foregut disease, these expert surgeons could deal with almost any GI emergency and be an expert in colorectal, pancreatic/biliary/hepatic, or foregut surgery.

I suggest that we change the way we train GI surgeons. Dick Bell suggested that we change the standards for case experience, improve operating room (OR) teaching and make operative skill a required competency. That is obviously a great start. I would move a bit beyond that and make three other recommendations for training GI surgeons.

1. Focus the first 4 years of surgical training on the development of broad competency in GI surgery. Then, focus 2 years of training on either HBP, foregut, or colorectal surgery. This will change residency training. Not every program could do everything, and some residents would need to move to obtain these last 2 years of training, but they are already moving to do fellowships, so this just makes it more formal.
2. Expand training to 6 years. The last year must be one of independence. Our residents are already training 6 or 7 years. This would assure both expertise and independence.

3. Forget about being “just a general surgeon”, and instead, become an advanced GI surgeon. Advanced GI surgery must become synonymous with quality, not basic competence.

So why go there? Our trainees have adapted to our current system and are almost all selecting more training. The SCORE project of the ABS has defined a terrific curriculum for our residents. Nothing is broken. Our outcomes are the envy of the world. Our training attracts the best of the world. I suggest that we need to alter the training paradigm, mostly for the patients, but also for our trainees.

The Zen in my title: “Zen and the art of surgical training” is why we need to train expert surgeons. So that they are effortless experts and that effortless expertise generates happiness and contentment in our surgical workforce. Effortlessness is the essence of Zen.⁶

Another parable (from David Foster Wallace): There are these two young fish swimming along and they happen to meet an older fish swimming the other way who nods at them and says “Morning, boys. How's the water?”, and the two young fish swim on for a bit, and then eventually one of them looks over at the other and says “What the hell is water?”⁶

I am not claiming to be the wise older fish mostly because I am not wise, but I also have this illusion that I am not getting older. The point is that, sometimes, what is the most obvious is the hardest to see. I could be speaking about the obvious conclusion that if you need 10,000 h of deliberate practice to be an expert, we are not even close to delivering it or maybe that everyone does not need to be an expert. I suspect, though, that the people in this room are either experts or want to be or they would not waste their time traveling to DDW. I am suggesting that sometimes the obvious realities are the hardest to see and for sure the hardest to discuss. So that is what I would like to finish with.

I want to speak directly to the residents and fellows and those just starting down this path. The real value of your surgical training (I am paraphrasing David Foster Wallace again here) is how to avoid becoming a comfortable, respectable, well-compensated, two-house, three-car, unhappy surgeon working endlessly at their job. The older people in the audience perhaps understand that there is a reason they call it work.

You get in your car and start driving to work, some moron in a Hummer cuts you off while talking on a cell phone, the attending anesthesiologist has refused to see your patient because the midline incision is not marked, the OR takes 2 h to turn over because the cleaning crew is short, this means you miss the soccer game for the fourth straight time. You guys are not there yet, but you will be.

Your default is: I cannot believe these overweight lazy brain-dead people are keeping me from doing what I want to do. Your default is—it is about *me*. It is easy to treat a nurse as if she (still overwhelmingly) is your servant. It is easy to treat the guys that clean the OR rooms like they do not exist *or* I can force—and I really mean force—myself to think that the cleaning crew is understaffed because one of the crew's kids was sick and the day care would not take him or the Hummer driver is taking his kid to the emergency room (ER) or the nurse has something to offer in the care of your patient.

Maybe you should listen. Listen to scrub technicians and nurses, listen to the residents, listen to your friends, and listen to yourself. Perhaps their lives are more tedious and boring than yours. It is possible, maybe not true, but possible. It takes effort to consider this, but you get to decide. You get to decide if you will pay attention, you get to decide who you will listen to, and you get to decide what has meaning. Let me illustrate with another parable from Kamala Masters.

A Buddhist practitioner went to visit her teacher. He was 84 and she was taking him to visit Buddhist sacred sites. At one point, they were in a train station. It was blazing hot. The train was 5 h late. There were no restrooms. They had no food. The station agents kept changing the track, so they had to keep getting up and moving. The student started to worry about how her teacher was holding up since she and her friends were barely coping, and he looked so frail. Finally, she decided to ask him if he was all right and he replied, "There is heat here, but I am not hot. There is hunger here, but I am not hungry. There is irritation here, but I am not irritated."⁷

Let us go back to surgery. There is confusion here, but I am not confused. There is anger here, but I am not angry. There is irritation here, but I am not irritated. Only the surgeon can bring order from chaos and confusion in the OR. When a surgeon becomes confused, unsure what to do, irritated or angry, the system tends to fail and the danger of a bad outcome rises.

The real value of surgical education is the freedom that comes with self awareness and the flow that happens during a great surgical procedure. This means focusing completely and totally on the patient.

The alternative is a focus on something that will fade—beauty, intellect, wealth, even personal freedom. None of this has anything to do with how smart you are, though we have already selected you for that. It has to do with staying completely in the moment. This is the essence of Zen. If your mind is ready and focused, it is open to everything. If you are thinking about what happened yesterday or what you need to do tonight, there are few possibilities.

The beauty of surgery is that we have the means to get to that place every day. We just need to be in the OR; we need to be with our patients. "It's the water", but being in the OR does not mean standing around checking text messages or answering pages, it means being totally engaged.

A great book called *Flow* proposed that there were three professions in which flow was an intrinsic part of the job, professional dancing, rock climbing, and surgery. Not medicine in general, but surgery. The author Mihaly Csikszentmihalyi interviewed many creative people, and they all described the same experience (Fig. 3).⁸ A reality that was different from everyday life. A pianist described it as a state of ecstasy in which the music seemed to flow out of his hands as if his hands moved by themselves. Ecstasy is a Greek word that actually means standing to the side. A poet described it as opening a door and floating through. It is not something he could force, and most of the forces were trying to keep him from opening the door.

The mystical part of this is that the author concludes that this is the path to true happiness. Furthermore, that this is not something that is confined to smart people or artists, but that it is available to everyone, *but*—and of course there is no free lunch—that is why they call it work. It takes 10,000 h of deliberate practice over 10 years to get there. Let me try for a minute to describe what he considered flow and apply it to surgery:

First, there must be total concentration with clarity of the task before you.

You must have the ability to look at a surgical problem and know what to do, the complex pattern recognition needed to know where everything is or might be.

There must be a feeling of being totally present and totally in the moment.

Even though it is a stretch of your ability, you must have the feeling that you have the skills to do the task. We are back to that 10,000 h.

As things become more complex, a feeling of serenity, effortlessness, and clarity should become more noticeable, and finally

Timelessness: that star wars coming out of hyperspace feeling after a particularly complex procedure, realizing that hours passed in what seemed to be a moment.

I suggest that you have all felt it doing something. You have felt total engagement in which you are not aware of time passing. The slowing down of an operation or a sport when it is the most dangerous. You have a feeling that your hands are just doing something and when you think about how your hands do it you lose that feeling. The feeling that your mind is not concerned with anything but what you are doing right now.

We have the ability to achieve this every day in the OR. The trick is to get there, to stay there, and to apply it to the rest of what we do; apply it to the real world of traffic and Hummers.

So this is all very esoteric and interesting, but what does it have to do with GI surgery? The system we have set up is to broadly train a minimally competent surgeon who can hopefully get more training by others and become experts.

It comes back to the fish. Why did every one of us pick surgery—not because it is easy, not because it makes us rich, but because we thought it was cool. I vividly remember watching R. Scott Jones removing a bile duct cancer when I had no real idea what a bile duct was. It was effortless without a wasted motion. That was why I wanted to be a surgeon.

We need to focus completely on developing the skills that made us want to do this in the first place. The problem is that a trainee does not typically have the adequate skills to develop this ecstasy of stepping off to the side. If you are worried about the 200 steps of a Whipple procedure you cannot develop flow, same deal with a colostomy or anything.

You get back to that pesky 10,000 h and the need for deliberate practice for its own reward because clearly you can do a procedure without flow and do a good job. The commitment to get to this level needs to be that of the violinist practicing 4 h a day for 10 years. My proposal is that it is worth it and that we should focus within our training programs to help our trainees become experts. That is how to make Johnny a surgeon. Not through curriculum, not by decreasing what we expect of them. We can make Johnny or Joannie (sorry) a surgeon by narrowing their GI focus and giving them the means to develop flow. That means deliberate practice outside their comfort zone. It means independence in the OR and in the ER. It means getting back to attracting people that want to do surgery because it is just the coolest thing in the entire world. We want those guys and gals, and we must not ever turn them off.

So my advice to the younger surgeons: Commit yourself to becoming an expert in something. Prioritize your time, and do what makes you happy. Please do not think of this as an assault on work hours. I totally support them. The first thing I tell new young faculty is to take up golf, and never ever skip a family vacation. How do you not miss that soccer game? By not planning something that you know deep down will conflict with it. Multitasking does not work.

When you are “at work” and training is not school, it is work. Watch, without distraction, someone that seems to have flow. You know who they are. Get out of the library or the cafeteria and watch people do surgery, watch them talk to patients. You did not dedicate all this time to training to not drink from it at every opportunity.

Know a disease so well that you do not have to think to know what to do. Know an operation so well that you anticipate what will happen. Know a patient so well that you know what they would want, and when you are not in the OR, focus on true happiness. Find people that make you happy and hang with them.

My mother died last October. I do not bring this up for sympathy. She developed unresectable lung cancer and was 83. She focused her life on having a gin and tonic with my wife Chris every night. Only I could make it appropriately. That hour every day with the two women of my life was a special gift. You will never know where that gift will be lurking unless you stop a bit and listen.

I am convinced that we need to change the way we make Johnny a surgeon. Our focus must shift to developing expert GI surgeons focused on specific GI diseases. We need to focus on the Zen of this wonderful thing we call surgery. It is the water that makes this all worthwhile. It is why we all chose to do this. It will bring us nothing but happiness and satisfaction. That is how to make Johnny a surgeon.

This is truly the pinnacle of my career. It is a pleasure to share this day with my closest friends. I feel like I have grown up as a surgeon in this society and thank the SSAT for this privilege.

A final parable:

A lecturer at a university is giving a pre-exam lecture on time management. On his desk is a bag of sand, a bag of pebbles, some big rocks and a bucket. He asks for a volunteer to put all three grades of stone into the bucket, and a keen student duly steps up to carry out the task, starting with the sand, then the pebbles, then the rocks, which do not all fit in the bucket.

“The is an analogy of poor time management,” trills the lecturer, “If you'd have put the rocks in first, then the pebbles, then the sand, all three would have fit. This is much like time management, in that by completing your biggest tasks first, you leave room to complete your medium tasks, then your smaller ones. By completing your smallest tasks first you spend so much time on them you leave yourself unable to complete either medium or large tasks satisfactorily. Let me show you.”, and the lecturer re-fills the bucket, big rocks first, then pebbles, then sand, shaking the bucket between each so that everything fits.

“But Sir,” says one student, slouched at the back of the theater, “You've forgotten one thing.” at which the student approaches the bucket, produces a can of beer, opens it and pours into the bucket. “No matter how busy you are,” quips the student with a smile, “There's always time for a quick beer.”

Thank you again for this great honor.

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Fig. 1.
Gonzalo Gasca

Fig. 2.

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Fig. 3.
Mihaly Csikszentmihalyi Flow: The psychology of optimal experience Harper 1991