

Threshold Concepts

Hej kära läkarstudent (eller annan student / inte student). Kul att du var nyfiken på det här! Detta är en kort sammanfattning av en workshop på [AMEE](#) (konferens om medicinsk utbildning) som jag tyckte var oerhört givande (hittade den egna kommentaren: “This is super helpful”). Hoppas du också kan ha nytta av den och lära dig ditt eget lärande och få inspiration till fundera över de exempel som kom upp och egna.

Feedback och errata får gärna skickas till info@hus75.se. Trevlig läsning! /Tengil

From the workshop “*Applying Threshold Concepts to Medical Education*”, AMEE, August 2017 held by Janice Hanson, Virginia Randall and Lindsey Lane.

Background

Meyer and Land, 2003, UK. Expansion of Merzirow’s “Transformative learning”. Threshold concepts were first applied to higher education economics and engineering and to medicine since the last two years.

Characteristics

- Transformative: Ontological shift [Ontology is the branch of philosophy that studies concepts such as existence, being, becoming, and reality. It includes the questions of how entities are grouped into basic categories and which of these entities exist on the most fundamental level.], changes how an individual view him-/herself. Significant change in attitude and perspective toward new profession. Change in value system.
- Integrative: Other ideas and observations are now making sense, the missing piece. Instead of seeing pieces, now you see the whole picture.
- Irreversible: Once learned, cannot un-learn. Once seen, cannot un-see. These first three (transformative, integrative, irreversible) are linked.
- Troublesome/Liminal: Liminal space – standing on a threshold. Student approaches, then backs away, from new knowledge. Angst expressed as anxiety, loss of empathy, cynicism, depression, dropping out of school, “why the h’ll am I still here?”. Engaging a threshold concept may make the world more troublesome in that it is more complex and difficult to predict. Could also be a pleasant experience.
- Bounded: Reflect the knowledge of that discipline. Language and knowledge is “bounded” by the limits of that discipline.
- Discursive: Student uses language of discipline naturally and not as a script. Learning the language of the discipline involves threshold-like transitions. Becomes “one of the team”, fitting into community of physicians.

Prime example

It’s about the patient – an example from 3rd year clerks [intense clinical rotations]. “Sometime since the first day, and I am not sure when, there came a point where I no longer cared about

embarrassing myself or how I did things, but rather *I started caring about treating the patient* and doing the best I could. That my needs, whether it be hunger, thirst, sleep, a clean house or education, *are always going to come second to my patient's needs.*”

Dig deeper

- Think of a threshold concept you have experienced in your career or studies.
- What is the most important concept you have understood that enables you to “think like a health care professional”?
- What is the most difficult concept (not skill) that you have encountered?
- What threshold concepts have you seen others struggle with during their education/career? Were you able to help them understand it?

Got stuck?

You (or someone else) might lose empathy for patients and families. You may question whether you should remain in medical school. you may have trouble with work – life balance. You may experience depression or anxiety.

Think about how you can help yourself or someone else come “over the threshold”.

Recognize the struggle, lack of engagement with a threshold concept is partly cognitive and partly meta-cognitive. Safe place, non-judgmental listening, discussing tacit assumptions, read between the lines. Normalize struggle (when you struggle you are learning something). Give words to the concept, find similar examples.

Further reading

You can read more and find lots of resources at ee.ucl.ac.uk/~mflanaga/thresholds.html

Examples

These examples were provided by the participants of the seminar, compiled by the seminar leaders and then expanded and made somewhat more intelligible by me.

Patients

Patients will make bad decisions: And often you have to accept that. It is not your fault. If you have provided all the advice and information adapted to the individual patient as best as you can, then you have done your part. You can't make decisions for them. It's their life and you can't change them if they don't want to change. Even if they do nothing but shoot themselves in the foot, one toe at a time. Keep giving them chances though, they might change their stance with time. Not all obnoxious toddlers and teenagers turn into obnoxious adults. And remember this as a general rule "You cannot reason people out of positions they didn't reason themselves into", though it might always be worth a try anyway.

There are, as always, exceptions. You do have a responsibility to step in and paternalize when a patient is not in a state of cognition to make decisions about their health, this is prevalent in psychiatry, addiction and dementia. Mostly in their acute states, and it's easy to go too far once you have started paternalizing.

You have to meet the patient where they are: In terms of knowledge, motivation and mood. Motivational Interviewing expands very neatly on this, you could read more about it from the summary on this site or just by searching for it. [This could be a good start](#)

The patient is more than a medical problem: What this illness means for the patient is usually more important than the illness itself, both in thinking and in practice. No medical problem exist in a vacuum, it exists in a body and the person of this body exist in their context too. Most often in a family that needs to be involved in the treatment too, to different extents depending on the relationships, independence and will of the patient. It can be helpful to ask oneself "What patient has this illness?" rather than "What illness does this patient have?"

Some patients will die on you: It could be your fault but doesn't have to be. Make sure you can talk and ventilate about it as much as you need. Later, make sure that not only you but others can learn from this if there was something that could have been done differently. "To err is human; to admit it, superhuman." Death is real, it could happen to a normal, healthy looking, beautiful baby. You could be accused even if you did nothing wrong. The only sensible thing to do is to be honest.

Other times they will become chronically disabled by their disease (and sometimes by our treatment), then habilitation (without re-) is the goal. Make the best out of it. Find a definition of success that is no longer a cure. "Cure sometimes, treat often and comfort always."

You

Your focus and your most valid reason to practice medicine is the patient: The main focus is not you and your skills, neither your feelings or aspirations, it's the patient and their needs. You now have the primary responsibility for your patient's life, wellbeing and comprehensive care during the time they are in your hands. No one else is gonna do that for you. A heavy burden and a hard-earned privilege. Don't lose focus. If you can grasp this as a student, or make your future students grasp this, you have done a great thing.

The result depends a lot on you now: When the responsibility is on you it means that you and your decision might be the thing making or breaking the patient this time. You will most often make it but sometimes break it. You have to find ways to cope with this. You can't know everything and you can't always do everything right. Find ways to minimize errors (checklists, ask others). You are important.

Know your limits: You have limits, a lot of them. Knowledge, practical and social skills, physique to name some. In lack of knowledge, never guess, ask or look things up, that is appreciated most in the long run, others know that you know what you know and don't know. When there are things that cannot be known or too much, you have to learn to work with uncertainty, doing the best with limited options, mediocre CPR now is better than perfect CPR in an hour, but make sure to learn what you won't have time to learn when it's needed. And bring pocket guides.

Being smart isn't enough, knowledge isn't enough, you need to do something with it, cultivate it. Know the limits and help yourself in advance.

Learn to take a break before you break apart. Gap semester, gap year, gap day or 5-minute pause. Incorporate rest on every scale of time, hour-day-week-month-year-decade. It will keep you from burning out and help you reflect on where you are going.

Know your biases: You have biases, some that you know of and perhaps many that you don't know about. Try to get to know them, despite your best intentions, they might stick around for a while. Know and learn how to consciously balance them out, continuously challenging them. Having them existent but insignificant. You can't rid yourself of every bias and prejudice, but

strive to know them and do things better because of it. Allow yourself to be surprised and stand corrected. This is truly key to becoming a truly good professional and break the boundaries previously set by your own mind. Fight your social prejudices about people and behavior. Fight your cognitive biases.

At some point you start to notice the biases of others, try to adjust for that. In the rare occasion that you get a good possibility, you may try to make another aware of some of their own bias. If they are as willing to learn as you, you made them a great service. If not, you know something important about their character.

Know your place: Not in the sense of never questioning anyone senior. In the sense of knowing what your responsibility and scope of impact is. In the big picture you alone most probably won't "save the world", but you will impact many people a little and a few people a lot. Perhaps you will even get to affect the systems that form the people a bit too. Then you have done a great thing. It's not an accident that you are here, find your purpose - you have an important role to play in many people's story, including your own.

Physicians play an important role as advocates for human rights in society at large. The International Physicians for the Prevention of Nuclear War (Svenska Läkare mot Kärnvapen i Sverige) is one prime example of physicians using our privileged position for an important cause. You have a great opportunity to make things just a little bit better, sometimes even a lot better.

Cultivate accurate self-knowledge: This is very difficult. And very important. You need to know what you know. Don't think lesser of yourself than others, and not better either. Whether you think you're so much greater or so much lesser, you are most certainly exaggerating. Most of us are in the middle. Don't be too hard on yourself, and don't be too soft. Learn what poses the main threat and work on that. You can be better but never perfect, give up on that. If you got in that means you're smart enough. If someone hired you, they think you're good enough. You belong as much as anyone else, not less, not more.

You will feel like an impostor often (read about impostor syndrome, preferably on a regular basis), that's fine. You are where you should be and you will get more comfortable over time. We are all figuring things out as we go.

This is more or less your life now: You don't just "work" as a physician, do you? You are a physician. This carries over to the (sometimes small) part of your life that you live outside the hospital, you now represent medicine to those around you, whether you want to or not. High standards with high rewards. Remember it's always better to self-censor than have someone else

pointing it out to you. Strive to be someone you can be content with. You have to deal with yourself for all your life and to others, this you will always be "the doctor" to some extent.

Work-life balance is crucial: Some realize sooner than others that you need to prioritize rest and other parts of life or your studies or job might just take it all. You have to find balance between being a good physician with all that it entails and having a good life outside of it. Your choice of specialty will impact your range of options heavily. Continue to set boundaries, find what works for you. Life is a marathon. You will work for decades. Define what you need more of and prioritize that. What good is money if you don't have time to enjoy it? Find spaces of true rest. Be physical to rest from the mental.

You will, at times, be consumed by your exams and caught in the hustle of your peers (you know who they are). That's fine. But try to get out of that when you can, then focus on developing a deeper understanding, on learning some of these concepts and on doing what is truly important.

You don't know how you'll react until you stand there: It can be easy to think that you know how you'll react to a situation, e.g. your first death of a patient, but you won't really know for sure, until you actually stand there. One med student I know was very chill about the dissections during the anatomy courses, while not his favorite activity it still went on without any trouble at all. Surprise then when at the first obduction he almost fainted and had to be rescued by a fellow classmate from falling on the floor in the corridor. The discrepancy was strong between the consciousness that said "This is fine" and the physical reaction which was shutting down the system, one part at a time. The student, who very much want to stay anonymous, was fine in the end, but he's no pathologist in the making.

Medicine is emotional, you will (need to) learn the value of presence and accompaniment in dealing with loss. How to put other's feelings first, and deal with your own later. Don't lock them away. It will get easier with time, don't let it become too easy.

On a related note, you will do some of your "firsts" on acutely sick patients, prepare before your time is limited.

Sometimes helping hurts: In a double sense. First it means that sometimes hurting – inflicting physical pain – is a part of what's best for the patient. Not all that is good is comfortable, and often it's the reverse. No pain – No gain. This doesn't mean that you should get comfortable hurting others, neither does it mean that what you feel is crucial in that emergency, the feelings have to wait and you have to do the best you can, and then call for adequate help. Secondly it means that sometimes what seems kind and helpful might actually be hurting the patient in the long run. Just

giving patients what they want right now might not be what they need the most, that's where your assessment comes in.

Picking specialty is more than picking an organ: You are very much deciding how much time and effort you're willing to assign to your career. And you are choosing what kind of work hours you'll have and who your colleagues and clients will be for the rest of it (unless you switch tracks). Don't let stereotypes fool you but know that you become like those around you and you will be shaped by (and also shape) the environment you work in.

The true currency of productivity is not time: Neither is time the true currency of life either. It's focus. You will need to learn what is important and focus on that. Simplify, remove the noise. Know what really, like really, needs to be done, and what can wait. This makes decisions a lot easier, and life a lot more manageable. Note that there is also an enormous difference between superficial busy work and deep, focused work. The former is a necessary evil that should be minimized, the latter something to strive to incorporate a lot more of. Flowing sessions of reading, writing and analyzing. *Deep Work* by Cal Newport is highly recommended.

You do not have to be limited to your own experiences: In all of this, you are not alone and you are not the first nor the last. Share your insights and experiences with those around you, and try to find those you prefer most to share them with. Seek good books, medical (like *This is Going to Hurt* and *The Man Who Mistook His Wife for a Hat*) and others, learn from them, work your way through list you find about books that might benefit you. Get interested in reading, let a book be your scrolling in idle moments of your day. If you are an introvert - read *Quiet* by Susan Cain, actually, read it even if you're extroverted.

Medical

Medicine is very much problem solving: Some problems cannot be thought through but must be solved by patient practice and persistence. If you get stuck with a problem, you have to find a solution on a higher level. Through all this you need to know what problem you are solving, only ever take test and make radiology when it is going to change your course of action. If the test result doesn't affect anything, then why take it? It's just medical trivia, a fun fact that takes more than it gives.

Setting a diagnosis is an art form: You need to do testing without knowing exactly what you need to test for. You need to develop the ability to live with and embrace uncertainty/ambiguity

and pursue multiple concurrent and complex management plans. Make decisions based on the available information. Please beware of hindsight bias, thinking you (or someone else) knew more than they really did when they made a decision. Sometimes the most important thing is not to make the diagnosis, but to realize that your ideas of what the diagnosis is are wrong. At some point you need to realize that life is not like an MCQ, there isn't always a right answer and sometimes there isn't even a good answer. Common diseases can present in uncommon ways and vice versa. Remember Occam's Razor (the simplest explanation is the most likely) and Hickam's dictum (A man can have as many diseases as he well pleases). Often, what looks like a zebra is most likely a horse with painted black and white stripes. But always keep a list of alternatives, it could in fact be a zebra.

There's also two fundamentally different approaches to setting a diagnosis:

1. Criteria based and hypothesis driven - what you learn mostly in med school.
 2. Pattern recognition ("gestalt") and intuition - what senior physicians learned from experience.
- None of them are perfect and both deserve to be challenged. This distinction and balance is similar to the one of evidence-based medicine (EBM) and the "art of medicine". Let them both do what they do best and be complemented by the other.

This intuition is something that takes experience, your implicit knowledge of what a disease looks like will build with each case and train your clinical eye. This goes for other staff as well, if a nurse says a patient looks really unwell, you better believe her until proven otherwise. Trust the instinct and gut feeling, at least in areas where you do actually have expertise. Being a great cardiologist doesn't make you a good neurologist (and vice versa).

What homeostasis really means: The systems of the body always try to balance themselves, that's what they are designed to do. This goes for electrolytes, acid-base, sensory input, vital signs and so on. Most diseases can be seen as failure to achieve that balance (without causing more trouble). Death and morbidity always have the aspect of failure to achieve homeostasis.

Coworkers

Many will lose empathy along the way: Some more and some less. A few will become very bitter, others will be obviously bad clinicians, sometimes due to lack of knowledge but more often due to lack of people skills and empathy. These will be people in all stages of their career, don't take them as role models. If you can, help them find new ways or regain their driving force, but do not let yourself be drained or drawn down by others' negativity (whether it'd be pessimism, cynicism, bitterness or regret). Remember that you do not know what they are going through and what made them end up where they are, sometimes it's a good thing to ask. Many do all their best of what energy they can muster up. Finding the right balance of emotional involvement is key to not end up in either cynicism or emotional fatigue with subsequent

burnout. If you lose your empathy, try finding it again, perhaps take a longer break from your current situation if necessary.

Some colleagues will be unfit for their job: Some more and some less. Some students and later clinicians are not prepared to do more for their studies or work than the absolute minimum. Others will regardless of ambition be too lacking in knowledge or skill to do a good job, worse so if their hubris prevents them from seeing it. It goes the other way around too of course, competent people who either don't value themselves or know how to make others see their value. An even worse problem are those that will abuse their position to gain personal advantages. Perhaps you heard of #metoo? The largest outcry in Sweden was from physicians and medical students, read those stories, again if you already have, and then remember they could be working on your clinic. [Some of the stories in Swedish](#)

Learning to work with others: Know both your own and others' limitations. Learn how to communicate and handle different types of people. Realize that you will one day be on the level of your superiors and that your students or younger colleagues will one day be as superior as you. Communication is not giving out information, it's making sure that information is as available as possible for the recipient to be made into actual knowledge. Then making sure they really got it if it is important. When discussing with other professions, seniors, juniors and peers, pick your battles wisely.

A lot of communication, and sometimes the most meaningful part, is non-verbal. Dare to listen, ask and act more upon those cues given to you. It might be the only way someone is going to tell you something.

General

Life is unfair: Both personally and in society. We are born and grow up with vastly different circumstances, and these very much affect our health. The connection between socioeconomic status and health is very strong. Poverty facilitates disease and disease facilitates poverty. This also affects a patient's ability to work with medical information (health literacy) and how well they are able to cope and work with their problems. Patients can have very different experiences, don't take it personally if someone despises health care in general (and perhaps physicians or psychiatry in particular). The structure of society affect our lives on a profound level, important to have this in mind, not everyone are in the same position as you, our strengths and weaknesses differ, sometimes a lot. You need to be part of the change you want to see.

Most things are a spectrum: This goes for symptoms, diseases (very much so in psychiatry) and opinions. Most cut-offs and categories are arbitrary, changing these changes who has a disease and who hasn't. Obligatory to have in mind if you decide to dive into both personality tests and personality syndromes. This also means that you can have some attributes of a category without necessarily belonging in that very category. Most things are different shades of grey (though not fifty), and even the whites and blacks have their nuance. Life is not right and wrong. Different values often collide and there's always (at least) two sides of the same coin, hear both before you make a final decision on important matters.

There are always exceptions: For symptoms, diseases, people and everything. Expect to be surprised from time to time. When something is off, it could always be one of these exceptions, bear this in mind. There are also exceptions to this very rule.

I who wrote this is just another person with my own flaws: Take what you find good and useful out of this cake of concepts and advice. Some might not be relevant, some might not be helpful and I might've gotten things wrong. I'm sorry about that and please feedback me about it. I do hope you find valuable insights, and most importantly find the inner voice calling you to pass more of these thresholds on your own. A document like this is a great place to start but not to end that searching journey.

All the best,
Tengil