SAMPLE

Building Tomorrow's Midwives

Two Lives, One Clock and the Machine That Watches

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Introduction

At twenty past three in the morning a woman who has been in labour for eleven hours asks whether she can stop. Not stop the labour, she says, because she knows that is not on offer, but stop being the person it is happening to, get up, go home, come back when it is easier. The midwife sitting on the floor beside the bed does not answer immediately, and the four seconds of silence are the most skilled thing anyone will do in that room all night, because there is no correct sentence and a wrong one closes the door.

That pause is where this book begins. Everything a midwife knows, the anatomy, the pharmacology, the signs that mean transfer and the signs that mean wait, is in service of filling a silence like that one with something a woman can use, and the knowledge is not the trade. The knowledge is what makes the trade possible, in the way that knowing how a piano is built makes it possible to play one badly and, with another decade, well.

So what is the trade? A midwife attends a process that will happen whether or not she is present, on a timescale that cannot be moved to suit a schedule, involving two patients whose interests are usually identical and occasionally not, in a room where the only person awake for the whole of it is her, and she is not the person who catches the baby. Catching a baby is a few seconds of an event that may last thirty hours, and a passer-by with clean hands and no training can do it, and sometimes has to, and she is also not the person who holds a hand, though hands get held. If the trade were either of those, the machine would have replaced it in the last century and the argument of this book would be about something else.

The trade is the judgement of when to do nothing. It is the only clinical discipline in which deliberate inaction is the treatment of choice for most of the working day, and it is therefore the discipline most poorly served by instruments that reward action, and a monitor prints a trace whether or not anybody reads it well. A scoring system produces a number whether or not the number means anything for the woman in front of it. Neither of them will sit on a floor at half past three and say the sentence that lets a woman continue, and neither of them will know, an hour later, that continuing was right.

That is the argument of the book, and it is not an argument against machines. It is an argument about which part of the work the machine has actually taken, and the answer is nearly always the documentation rather than the judgement, and trace interpretation can be drafted. Risk scores can be computed. Discharge summaries can be written from a template faster than a

tired person can write them at the end of a night shift, and the template will spell the words correctly. What no system does is decide whether the trace matters for this woman on this night, and the moment a unit stops asking that question is the moment the machine has quietly been promoted past its competence.

Two caricatures stand in the way of an honest account, and both are flattering, which is why they survive. The first is the hand-holder: warm, calm, present, essentially a form of emotional support with a professional body attached, whose skill is kindness, and kindness is necessary and insufficient. The midwife who is merely kind and cannot recognise a shoulder where a head should be will be kind all the way through an emergency she did not see coming. The second caricature is the opposite and more modern: the clinician who manages a labour on a screen, competent, protocol-driven, reading a trace in a room she has visited twice, and who has been taught to distrust her hands as sentimental. Both caricatures delete the same thing, which is the reasoning that happens when a person is in the room and paying attention to a body rather than to a printout.

Between them sits the actual work, and it is harder to describe than either because it consists largely of things not done. A midwife who decides not to examine, not to intervene, not to transfer, and is right, produces no record of a decision that a manager can audit, and the audit will count her as having done nothing. Multiply that by a career and you get a profession whose most valuable decisions are invisible in the data that a health service uses to judge it, and a service that rewards the visible interventions it can count, and that asymmetry is not a bureaucratic accident. It is the central structural problem of the trade, and chapter six is where its consequences are counted.

The machine arrives in this landscape with a particular shape, and it does not arrive as a robot with hands. It arrives as prediction: a model that looks at a woman's history, her vital signs, her labour progress, and returns a probability that something will go wrong, and the probability is not useless. A well-built one can move attention toward the people who need it, which in an understaffed unit is a real gift. But a probability is a population statement wearing the clothes of a personal one, and it has two failure modes that matter here more than elsewhere. It can be wrong in a way that is hard to see, because the woman in front of you is not a population. And it can be right in a way that is worse, because a high score invites intervention, intervention has its own cascade, and the cascade will be recorded as having been clinically

necessary. A trade that cannot tell the difference between prediction and judgement will hand its core skill to a spreadsheet and describe the handover as progress.

This volume is the ninety-seventh in a series about trades being rebuilt around machines. The series has a habit, which readers of earlier volumes will recognise, of stating what the work is before discussing what threatens it, on the grounds that a profession which cannot describe its own craft will defend the wrong parts of it. Midwifery makes that habit necessary rather than merely tidy. The parts of this trade that are easiest to see, the delivery, the emergency, the drama, are the parts that a camera would film. The parts that decide whether a woman and a child come through well are the parts a camera would find boring: the observation, the waiting, the conversation that changes what a woman is willing to do, the note written at the right moment that later saves a colleague from a wrong assumption.

A promise before we start, the same one the series makes in every volume. No invented statistic, no unnamed authority, no figure that will be false within an edition. There are no thresholds printed here, no doses, no timings, no scores, because all of them belong to a jurisdiction, a guideline and a year, and a book that prints them is a book that expires. Where the arrangements of the trade vary between countries, the text names the variation and hands the local facts to the reader, who needs them far more precisely than any volume can supply. Every woman, family, unit and colleague described in these pages is constructed for the chapter in which they appear; the unit whose year occupies chapter nine is invented and is labelled as invented where it first appears.

What remains, once the figures and the names have been removed, is the reasoning. It does not expire. A reader who finishes this book should be able to say what a midwife actually does, why the waiting is the work, what the machine genuinely takes off her hands and what it merely appears to take, and what a service loses when it counts only the interventions it can see. That is a modest list and it is the whole of the book's ambition. The rest is the room at half past three, and the silence, and whatever gets said next.

How to Read This Book

The volume is built to be read in order and it is built so that it does not have to be. A practitioner who wants the argument about machines can read the first chapter, the eighth and the tenth and will have it. A student deciding whether

to enter the trade should begin with the third and fourth chapters, on what the education costs and what the day consists of, and then read the sixth, on why people leave, before committing to something that is expensive to undo. A manager who has inherited a maternity service and has four hours on a train should read the second chapter, which explains why the trade's two loud stories both mislead, and the ninth, which is a year in a unit that does not exist and will be entirely recognisable.

Three conventions run through the book and are worth stating because they are deliberate. There are no numbers in the body of the text, which means that where a figure would normally appear the prose describes the shape of the thing instead, and a reader who needs the figure will have to get it from her own jurisdiction, which is where it belongs. There are no named services, regulators, employers or manufacturers, which is not coyness but a consequence of the series' rule that a book should not expire when an institution reorganises. And every person, family and unit described is constructed for the chapter in which it appears, including the unit whose year occupies the ninth chapter, which is labelled as invented where it first appears.

The book has an argument, and it is not that machines are bad. It is that the trade's product is a quality of attention at a moment that cannot be repeated, that almost every instrument in the trade's history has been an attempt to move information out of that attention and into a system, that this has been mostly good and occasionally catastrophic, and that the newest instruments, which predict rather than record, change the balance because they make a claim about the future that the practitioner cannot check and cannot argue with, and everything else in the volume is an elaboration of that sentence. A reader who finds the elaboration unnecessary has understood the book, and a reader who wants to know how the argument behaves in a real year should turn to the ninth chapter first.

Chapter 1: The Trade That Is Not in the Room

A woman in her thirties, expecting her first child, is asked at a booking appointment what she would like the birth to be like, and she says she wants to be listened to. The midwife writes it down, because that is the answer the form invites, and then asks a second question the form does not invite, which is what being listened to would look like at two in the morning when she is exhausted and asking for something the staff do not want to give. The woman has no answer, because nobody has ever asked her the second question, and the honest reply would be that she does not know, that she has never done this before, that she is describing a hope rather than a plan.

That exchange is the trade in miniature, since the first question is a service question that any well-meaning person can ask while the second is clinical, because it is testing whether a preference is robust enough to survive contact with a real night, and the answer will shape what the midwife does at the point where the woman cannot speak for herself. A trade that only asks the first question produces a birth plan that reads beautifully and is abandoned within four hours. A trade that asks the second produces something a colleague can act on at three in the morning when the person who wrote it is beyond deciding anything.

So let us try a definition and then earn it. Midwifery is the practice of attending a physiological process that would proceed without attendance, on behalf of two patients whose interests usually align and occasionally do not, with the authority to act when it stops being physiological and the discipline to refrain while it still is. Every clause in that sentence is doing work. Attending rather than conducting, because the process is the woman's and not the practitioner's. Physiological, because the baseline state of labour is health and not illness, which distinguishes this trade from nearly every other clinical discipline it sits beside. Two patients, because the arithmetic of risk here is not one person's risk. Authority to act, because the trade is not a spectator sport and a midwife who cannot intervene is not a midwife. And the discipline to refrain, which is the clause that the rest of the book will spend its time on.

Consider the last clause against the others, because an obstetrician's training points toward the decision to intervene, and the skill is in making that decision well and at the right moment. A midwife's training points the other way, toward the decision to leave alone, and the skill is in recognising the exact moment when leaving alone stops being safe. These are different skills, and the difference is not about status, which is the argument the profession keeps

having in public, but about what the day actually consists of. Most of a midwife's decisions are decisions not to do something, and the outcome of a good decision of that kind is nothing happening, which no one records.

Now the two caricatures, which the introduction named and this chapter has to kill properly.

The first is the hand-holder, who appears in advertising, in antenatal classes and in the imagination of people who have never been in a delivery room. She is warm, she has a calm voice, she brings a birth ball, and her function is to make an ordeal bearable. There is a real thing behind this caricature, and it is not trivial: a woman who is frightened labours differently from a woman who is not, and the presence of a person who is unafraid changes what is physiologically possible. That is a clinical fact and not sentiment, but the caricature strips out everything that makes the presence professional. The calm voice belongs to somebody who has already checked the notes, who knows what the last appointment said, who has noticed the swelling in the ankles and the blood pressure recorded at the door, and who is calm partly because she has already decided what she will do if the next half hour goes wrong. The warmth is the visible surface of a preparation the woman never sees.

The second caricature is newer and more dangerous because it is held by people who control budgets. She is the competent operator: competent with a monitor, fluent in guidelines, quick to escalate, and quietly convinced that her hands are a sentimental attachment to an older era. Under this description the trade becomes a set of protocol steps with a caring manner attached, and protocol steps can be audited, measured, scripted and eventually automated. The caricature is persuasive because it is partly true: much of what a junior practitioner does in a hospital in the first year really is protocol, and doing protocol well is a genuine skill. But the protocol exists because somebody, once, had to make a judgement in a room with insufficient information, and the protocol is the residue of that judgement written down for people who were not there. A trade that only executes protocols has confused the residue with the thing itself.

What the two caricatures share is a missing middle: the reasoning that happens when a person is in the room, paying attention to a body, deciding what the information means for this particular woman at this particular hour. That reasoning is what the rest of this book is about, and it is worth saying plainly that it is not mysterious. It is a set of habits: knowing what normal

looks like in enough variations that an abnormal variation registers before it is measurable. It is knowing which of a woman's statements are data and which are noise, and knowing that the answer changes with the hour. It is knowing when a colleague's opinion is worth waking somebody for and knowing the difference between a body that is coping and a body that is compensating, and understanding that the second one looks better than the first right up until it collapses.

None of that is teachable by lecture, which is why the trade's education is built around hours in a room rather than hours in a library, and why a midwife who has attended four hundred births is not simply a more experienced version of one who has attended forty. She has seen more shapes of normal, and her threshold for interest has been calibrated against a wider sample. This is also why the trade resists being reduced to a curriculum, and why the arrival of a machine that claims to know what will happen is unsettling in a way that a new forceps or a new monitor never was. A tool extends the hand, and a prediction claims to replace the calibration.

The machine's claim deserves a fair hearing rather than a reflexive refusal, and the honest version of the claim is narrower than the marketing. A model trained on many labours can notice patterns a tired person will miss at four in the morning, and it can do so without resentment and without needing a break. In a unit where one practitioner covers twelve rooms, a system that flags the two rooms most likely to need attention in the next hour is genuinely useful, in the same way a smoke alarm is useful without understanding fire. The question is never whether the flag is useful but what the unit does with it, and whether the person receiving it retains the standing to say that this flag is wrong about this woman.

There is a particular failure that follows from getting that question wrong, and it is worth naming early because it recurs in every chapter. A prediction that arrives with authority creates a preference for the outcome it predicts. If a score says a labour is likely to be difficult, the room fills, interventions become easier to justify, and the cascade produces the difficulty. The prediction has then been confirmed, and the confirmation is recorded as evidence that the model works. Nobody in the room is lying and no individual decision is indefensible, which is exactly why the loop is hard to see from inside. It is visible only from a distance, in the aggregate, and only to somebody who is looking for it.

That is one of the reasons this book insists on describing the craft before

discussing its instruments. A trade that knows what it is doing can absorb a new tool and put it in its place, which is a shelf, at arm's length, consulted when useful. A trade that has forgotten what it does will reorganise itself around whatever arrives, because the tool appears to be more definite than the judgement it displaces, and definiteness is what an anxious institution rewards. The chapters that follow describe the work, the ways in, the day as it is lived, the rules of the craft, the losses, the other rooms, the instruments, a year and a life. Read them as an account of a competence rather than a defence of a profession, and the argument about machines takes care of itself.

One last thing belongs here, at the start, because it shapes everything after it. Midwifery is a trade that lives with an outcome it cannot guarantee. A woman can do everything right, a midwife can do everything right, and the night can still end badly, and the profession's entire emotional economy is built around that fact. Other trades can promise a working bridge or a corrected balance sheet, while this one can promise only attention, judgement and presence at a moment that cannot be repeated. That is a strange product to offer in an era that measures everything, and it is why the trade's practitioners so often describe their work in a language that sounds excessive from outside: they are not being dramatic, they are describing the only thing they can actually deliver, which is the quality of somebody's worst night.

The Two-Patient Problem Stated Properly

The phrase two patients is used so casually in this trade that it has stopped meaning anything, and it is worth stating properly because it is the structural fact from which most of the trade's ethical difficulty descends. There is a woman who is a person with a history, a will and a set of preferences, and there is a child who is not yet a person in any legal sense and whose interests are represented entirely by others, and the two of them share a circulatory system for nine months and a set of decisions for a few hours. Most of the time the interests of the two coincide so completely that the phrase does nothing; when they diverge, everything about the trade becomes difficult at once.

The divergence is not the melodramatic version that appears in arguments about maternal choice, in which a woman is asked to accept risk for the sake of a child she has not met. That version exists and it is rare; the ordinary divergence is quieter and it happens in the hours of labour, where a decision that is right for the woman's body may be less right for the child's supply of oxygen, and a decision that is right for the child may involve an intervention the woman did not want and will remember for the rest of her life. A

practitioner who has not thought about this in advance will discover it at the moment of maximum pressure, which is the worst possible time to be constructing a moral position.

What the trade has evolved, in place of a rule, is a practice, and the practice is worth describing because it is one of the profession's genuine achievements. The practice is that the woman is the decision-maker and that her decisions must be informed by a clear account of what is known about the child, delivered by somebody who is not trying to steer her and is not concealing a preference. That sounds like a procedural nicety and it is in fact a discipline of some difficulty, because the practitioner has a clinical view and is required to hold it lightly in the conversation while holding it firmly in the record and in her own advocacy. She must be the person who explains the risk without becoming the person who applies the pressure, and the difference between those two roles is a matter of tone, sequence and the willingness to repeat the explanation until it has landed.

There is a second divergence that the phrase conceals, which is between the woman and the people around her. A partner, a mother, a mother-in-law and occasionally a whole extended family have views about what should happen, and their views carry weight in the room because the woman may need them afterwards. The practitioner's obligation is to the woman, and the woman's capacity to hold her own position may depend entirely on the practitioner's willingness to create a space in which she can state it, which sometimes means asking relatives to leave the room and always means noticing who is answering the questions that were addressed to her.

The third divergence is between the woman now and the woman later, and it is the hardest of the three because both are the same person and only one of them is present. A woman in the middle of an exhausting labour may ask for something that the woman she will be in three days would not have chosen, and the practitioner is the only person in the room with an obligation to both. The craft's answer is not to override the present person but to slow the conversation down, to check that the request is being made rather than escaped into, and to say out loud what the consequences will feel like afterwards, which is a form of care that the present person may not thank her for.

Put those three divergences together and the reason for the trade's discomfort with simple decision rules becomes clear. Any rule that privileges the child produces an obstetrics that treats the woman as a vessel, and the historical

record of what that looks like is not something the profession needs to imagine. Any rule that privileges the woman absolutely produces a practice that cannot advocate for a patient who has no voice in the room. The trade lives in the space between those failures and constructs, case by case, a judgement that is defensible to both, and the construction is done in conversation rather than in policy. That is a fragile way to hold an ethical position and it is the only way that works, because the answer depends on which woman, which hour and which risk, and no document can carry that weight.

The machine's arrival matters most at exactly this point, and it matters in a way that is easy to miss. A predictive score is computed for the child with the woman's data, or for the woman with the child's data, and it collapses the two-patient problem into a single number that has no way of representing the tension. A model that returns an elevated risk of poor neonatal outcome has, by construction, taken a position that the child's interest outweighs the woman's preference, because that is what the training data encoded when it recorded what clinicians did. The number is not wrong to exist and it may be useful; what it cannot do is enter the conversation as though it were neutral, and a practitioner who reads it out as a fact rather than as an argument has handed the hardest judgement in the trade to a system that has never had to make one.

Where the Trade Sits Inside a Service

The same craft is arranged so differently between countries that a practitioner moving from one to another has to relearn her place as well as her practice, and the arrangement determines almost everything about the working day. In one system a midwife is the lead clinician for every uncomplicated pregnancy and birth, working with an obstetrician as a consultant rather than as a supervisor, and in another she is a skilled assistant in a process owned by a doctor, taking instructions and writing notes. The knowledge required is broadly the same in both; the authority is not, and authority determines what a person is permitted to notice out loud.

The arrangement also determines where the work happens, which shapes the craft itself. A system in which birth is concentrated in large units produces practitioners whose skill is in managing an institution: prioritising, escalating, coordinating, and keeping a woman's experience intact in a place designed for throughput. A system in which a substantial proportion of births happen at home or in small centres produces practitioners whose skill is in self-reliance:

deciding alone, transferring early, and carrying the weight of a judgement that nobody will check for hours. Neither practitioner is better trained than the other and each is nearly unusable in the other's setting for the first year.

Then there is the question of who is permitted to be present at all, which in some places is settled by law and in others by custom, and the two produce very different trades. Where the law says that a midwife may attend a birth independently, the profession develops an identity as a primary carer and negotiates from that position. Where the law reserves the function to a medical practitioner and permits midwives to assist, the profession develops an identity as a support and its claims to autonomy sound, to outsiders, like a bid for status. The same words, autonomy and responsibility, mean entirely different things depending on which of those histories a country has.

The placement of the trade inside a service also determines what happens at the boundary, which is where the interesting failures occur. A woman whose pregnancy becomes complicated crosses from midwifery care to obstetric care, and the crossing is a place where information is lost, expectations are reset and the woman herself is often handed from one relationship to another with no explanation. Services that have invested in the boundary, with shared records, joint clinics, and a named person who stays with the woman across the transfer, produce measurably better experiences; services that have not produce a seam, and the seam is where women describe feeling abandoned.

There is a version of this chapter that would argue for one arrangement over another, and this book will not make that argument, because the evidence does not support a universal answer and because the arrangements are shaped by histories that a volume of this kind cannot adjudicate. What can be said is that any arrangement has costs, and the costs are remarkably consistent. Concentration produces safety and anonymity, while dispersion produces continuity and risk. A strong medical hierarchy produces rapid escalation and quiet practitioners, and a weak one produces autonomy and unpredictable quality. A country chooses its costs, usually without admitting that it has chosen, and the practitioners who live inside the choice spend their careers managing it.

The machine arrives into whatever arrangement exists and is shaped by it more than it shapes it. In a system where the midwife is the lead clinician, a predictive tool has to be integrated into a relationship in which the practitioner is accountable, and the integration question is whether she can argue with it. In a system where the midwife assists, the tool will be integrated into an

institutional workflow and the argument will happen between managers, which means the practitioner's relationship with it will be one of compliance rather than of consultation. The same software, the same model, two entirely different clinical objects, and the difference was settled long before anybody wrote a line of code.

The Objection Worth Answering

The strongest objection to everything in this chapter is not that it is wrong about the craft but that the craft is a luxury, and the objection deserves a serious answer because it is held by people who control budgets and who are not acting in bad faith. The argument runs like this: what prevents most deaths and most injuries in childbirth is the availability of surgical capability, blood products, antibiotics and trained staff who can use them quickly, and all of that is expensive, and a service that spends its money on the quality of attention is a service that has chosen comfort over safety with somebody else's life.

The answer has three parts and none of them is sentimental. The first part is that the two are not in competition in the way the objection assumes, because the trade's attention is the mechanism by which the surgical capability is reached in time. A unit in which nobody noticed a change until it was unmistakable is a unit that will use its theatre late, and the lateness, not the absence of the theatre, is what produces the bad outcomes. Attention is not an alternative to escalation; it is the front end of escalation, and a service that has thinned it has made its expensive capability less useful without saving any money that would have been spent on it.

The second part is that the trade's attention is the cheapest safety intervention available and it has the best evidence of any of them, which is an awkward fact for a health economist and an important one. Continuous support in labour, from a person who is calm and present and not doing anything technical, is associated with better outcomes across a wide range of measures in study after study, in rich countries and poor ones, and the mechanism is not mysterious: a woman who is not alone labours more efficiently and her attendant notices more. A service that could buy nothing else could buy this, and many have decided not to, which is a decision about priorities rather than about evidence.

The third part is the one the objection cannot accommodate, which is that the thing being purchased is not a luxury in the way the word implies. A woman's

experience of birth is not a nice-to-have that is added to a safe clinical process; it is the process from her perspective, and it shapes whether she engages with health care afterwards, whether she is willing to have another child, how she parents in the first year and what she tells her daughters. A service that produces good clinical outcomes and frightened, alienated women has produced a result that its own measures cannot see, and the costs of that result are paid in a different budget line, years later, by a different service, which is why they never appear in the argument.

None of this settles the resource question, and the temptation at this point in a book like this is to claim that it does. It does not, and a service with a fixed budget and a rising birth rate will have to choose, and some of the choices will be between attention and equipment, and there are honest arguments on both sides. What can be insisted on is that the choice be made explicitly, with the trade's own account of its value in front of the people making it, rather than by a series of procurement decisions that each looked reasonable and that together produced a unit in which nobody has time to sit down. The absence of an account of the craft does not leave a neutral space. It leaves the space to whoever arrives with a product and a demonstration.

There is a version of the objection that is actually an argument about professional self-interest, and it should be named because it is used, sometimes dishonestly, against the trade's legitimate claims. If a midwife argues that a service needs more midwives, she is asking for her own profession's expansion, and a sceptical manager is entitled to notice that. The answer is not to deny the interest but to make the case in terms the manager can check: which outcomes are associated with staffing, which tasks are being dropped when the staffing is thin, what happens to the women whose calls are answered late. A trade that can describe its own value in operational detail will win more arguments than one that describes it in values, and it will deserve to.

That is the answer to the objection, and it is the reason this chapter began with a definition rather than with a defence. A trade that can say precisely what it does, and what happens to a service when it stops being done, is very hard to dismiss as a luxury, because the dismissal requires ignoring a function that nobody else in the building performs. The rest of the book is that description in detail, and the reader is entitled to judge at the end whether the claim survives it.

ABOUT THE AUTHOR

Aiman JoeHanz writes about work: the trades that hold institutions together, the people who do them, and what happens to a craft when the clerical layer around it is given to a machine.

Building Tomorrow's People is his series on the professions a society depends on, each volume written from inside a working day rather than from a policy document. The series runs past ninety volumes, from engineers and statisticians to paramedics, radiographers, occupational therapists and speech-language therapists, and it reaches midwifery at the point where prediction rather than recording became the instrument on offer.

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