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# STOCKMANSHIP JOURNAL

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# Grandin's Approach to Facilities and Animal Handling: An Analysis

by Whit Hibbard and Lynn Locatelli, DVM

## INTRODUCTION

The last issue of the Journal (Volume 2, Issue 2) was devoted to presenting, in a condensed form, the work of a very influential voice in the livestock industry, Temple Grandin, Ph.D. Dr. Grandin is the only person within the industry to voice concern regarding the welfare of cattle, then provide concrete recommendations despite sometimes monumental resistance. She is a role model for standing up for what she believes in, taking action, and dealing with the twin walls of resistance and tradition.

Due to Grandin's work, solid-sided, curved processing facilities (i.e., alleys, crowd pens and snakes—colloquially referred to as “tub” systems—that evolved independently in Australia, New Zealand and the United States in the early 1970s) [5] are very popular and used widely. Grandin claims that over half of the feedyards and abattoirs in the United States use facilities designed by her. Secondly, she stresses the importance of proper animal handling in those facilities, without which *no* system will work well. To this we agree.<sup>1</sup>

The purpose of this article is to analyze some of Grandin's ideas on tub systems and animal handling from the perspective of Bud Williams' teachings.<sup>2</sup> Each section begins with a summation of Grandin's position followed with the analysis.

This article should not be interpreted as “negative” or as an “attack” on Dr. Grandin. Our sole intent is to logically and objectively analyze the premises behind, the design features of, and the application of solid-sided, curved, processing systems and the handling of animals in those systems. Why, you might ask? Why not just let the advocates of the various animal handling systems go their own way and promote their own stuff? The answer is: Because there is a cost.

First, there is an intellectual cost in the sense of believing and propagating ideas that may not be true. Second, there is an economic cost involved in buying or constructing expensive processing facilities that may be unnecessary. As a prelude to what follows, we have found that many producers believe they need a solid-sided, curved processing system to effectively work their cattle and often go to great expense to install one, but that this belief is unfounded, the burdensome cost unnecessary in most applications, and there is a cost-effective alternative.

One purpose of a professional journal is to examine the claims made by those in the discipline.<sup>3</sup> If they are right, they need to be acknowledged; if not, they need to be challenged, and those challenges must be based on more than opinion alone. We want the reader to understand that we are not merely “sniping from the sidelines.” The following analysis is based on first-hand experience, observation, photographic and video evidence, and work with livestock and their handlers in numerous facilities. Whit Hibbard is a fourth generation Montana rancher who spent approximately 38 years handling cattle conventionally, then made a paradigm shift to low-stress livestock handling (LSLH) as taught by Bud Williams, which he has studied and practiced for the last 10 years. He began the Stockmanship Journal in January 2012 to promote the adoption of improved stockmanship through education, and began teaching clinics and doing consulting on ranches. Lynn Locatelli, DVM, with twenty years of veterinary experience working with people and their cattle in a variety of situations (e.g., herd health assessment, feedlot health assessment, and production events such as preg checking, processing, ultrasounding), studied with Williams for nearly two years, embraced his concepts and techniques, then began sharing those by providing LSLH education for the past

1 At the outset, we will disclose the obvious: The bias of the Stockmanship Journal is stockmanship. Although we recognize that proper design can improve livestock flow through a system, the most important ingredient is how the animals are handled.

2 See Volume I of this Journal for a comprehensive review of Bud Williams and his low-stress livestock handling.

3 This article is written in the spirit of the academic tradition. For reader's not familiar with that tradition, it involves an exchange in which subject experts analyze, evaluate, or critique the ideas of other subject experts, usually in papers published in academic journals, to which the other responds. The ultimate purpose of such an exchange is a search for the truth.

12 years in feedlots, ranches, and seminars. Dr. Locatelli has provided endpoint management via ultrasound on nearly one quarter million cattle through a large variety of processing facilities. Hibbard and Locatelli share Grandin's ultimate concern for the welfare of animals, especially through proper animal handling.

## DISTRACTIONS

One of the main problems that Grandin finds with existing systems is distractions. Early in her career, she made an effort to determine why cattle don't flow smoothly through some facilities; that is, why cattle would often slow down, balk, even turn around, to which handlers generally responded with rough handling and excessive electric prod use.

In so doing, she discovered that distractions, often seemingly minor and overlooked by others, made the cattle balk, and that their removal usually remedied the problem. [10] Most humans won't even notice the distractions, but Grandin stresses that animals notice everything and every detail is equally bad and equally important. Therefore, they *all* have to be acknowledged and taken care of.

Consequently, "the first step in fixing an existing facility is to remove distractions." [8] Common distractions include: shadows, clothing hung on the fence, coffee cups on the ground, people visible ahead, clanging metal, high-pitched noise, hissing air from compressors, sudden or unexpected sounds, changes in flooring (e.g., surface, texture, color, grates), high contrasts in lighting or color (e.g., between different sections of the chute), reflections (whether off puddles or smooth metal), slow fan blade movement, plastic (or anything) flapping in the wind, small objects on the floor (e.g., a styrofoam cup or plastic water bottle). [1, 2] Whatever the distractions, Grandin asserts, they *all* need to be identified and removed if we expect livestock to flow smoothly through a processing system.

The authors agree that anything that we can do to facilitate good movement of livestock through processing facilities should be employed to benefit, including making them free of unnecessary distractions. We understand and concede that distractions can be a concern to cattle and

cause them to balk under certain circumstances, such as animals that have been mishandled, or animals being off-loaded into a novel environment, especially if they are genetically flighty. Grandin has correctly identified this as a problem and persistently brought this issue to the attention of the livestock industry to its benefit. Based on a great deal of personal experience in abattoirs and feedyards, Grandin observed that the removal of distractions significantly facilitated cattle flow through systems. We have no problem with this. Removing distractions, especially in high throughput operations like abattoirs, is a prudent thing to do. However, just as Grandin has hammered this message, we intend to hammer the message that that is a misplaced concern for any feedlot, stocker, rancher or farmer who is the least bit interested in stockmanship. We take the position that these operations should be working on improving their livestock handling abilities and searching for behavioral solutions to handling problems, not mechanical solutions. From that perspective—which was the perspective of Bud Williams—we consider distractions unimportant, at worst, and at best, opportunities to work on ones stockmanship. So, as far as the authors are concerned about distractions, let 'em be! Our purpose is to persuade those who are overly concerned about distractions that they need not be, because it's *not* the distractions per se that are problematic, it's how we perceive them and how we handle the animals. From the perspective of LSLH, the real issue is not distractions that cause balking; rather, it is the mindset of the handler and a lack of proper animal handling that makes distractions an issue in the first place.

Let us explain. A primary purpose of LSLH is to communicate clearly to our livestock what we want or expect of them. This is done with good technique and projecting a strong, positive and confident presence, which results in establishing leadership and control over calm, cooperative and, ideally, emotionally fit cattle. "Emotional fitness" is a vitally important but under-appreciated and misunderstood concept of Williams. He believed



that it is essential to establish a rapport and mutual trust between handler and animal which enables the animal to remain in a normal frame of mind and to withstand the obstacles and demands of the human-controlled world that they must live in. In other words, being “emotionally fit.” Emotionally fit cattle will more willingly work for their handler, including moving through confined spaces and not being troubled by distractions. Contemporary production events that cattle experience are scary and stressful (e.g., processing). However, if we focus on being leaders who use effective, proper animal handling techniques, cattle can withstand stress and adversity. How do we as handlers make cattle emotionally fit? We do so by (a) communicating with the animals in terms that they understand (i.e., obeying the principles and using the straight line techniques outlined in Volume 1 of this Journal); (b) being calm, confident leaders from whom the animals willingly accept guidance (i.e., handlers know what they want the animals to do, they know how to tell the animals, they reward positive responses by releasing pressure, and they do not yell, hot shot unnecessarily, or send conflicting messages to cattle); (c) “reading” the animals and providing what they need (e.g., applying more pressure in order for them to understand the command, less pressure in order to accommodate the sensitivity of the animals but still get the job done); and (d) accepting the circumstances and environment in which we have to work with equanimity (e.g., if there are distractions, we as leaders accept that and don’t worry about it and work the animals despite them). Granted, in high throughput situations (e.g., abattoirs, sale barns, feedlot “fall runs”), handlers often don’t have the opportunity to establish rapport with the cattle, but they can still employ proper handling technique to facilitate cattle movement through any design. Just because high throughput is expected does not mean that handlers have the right to default to chaos, poor technique or excuses. Handlers should remain calm, focused, organized, and always employ

proper technique.

We believe that distractions are only problematic if (a) the cattle are not emotionally fit, (b) the handler has not clearly communicated what he or she wants and has not established leadership and control, (c) the handler has less presence than the distraction and does not know how to exert more pressure than the distraction represents, (d) the handler does not have good movement and flow through the system because of poor technique, or (e) the distractions are a concern in the handler’s mind, in which case they will be a concern in the animal’s mind. Stated conversely, if a handler (a) has made the animals emotionally fit (which understandably is not always possible due to circumstance, but still should not be an excuse for failure), (b) clearly communicates what is expected and has established leadership and control, (c) projects presence and applies effective pressure, (d) has good movement, and (e) is unconcerned about distractions, the cattle will sail right past them. When even a few of these elements are present, distractions tend to evaporate.

What usually happens when people process cattle is that they mishandle them. People tend to work “the way they work” out of habit or routine, and don’t respond to the needs of the individual animals. For example, sensitive cattle are often over-pressured which can result in panic, while desensitized cattle are under-pressured which results in not enough movement to flow through the facility. Sensitive, knowledgeable handlers will prepare cattle to go through a facility. For instance, if any cattle exhibit panic movement, the handler will quickly dissipate it before sending them through the facility. If other cattle need more movement to prevent stalling out, the handler will generate that movement.

With improper handling, cattle are not in a healthy state of mind which often escalates to panic. When cattle panic, anything new or different is a “red flag” and to be feared, which Grandin acknowledges. When people are jumping onto cat walks, leaning over the snake

and moving flappers in and out, when cattle are being hot shotted routinely, when handlers are yelling and waving paddles and flags around, it must be frightening to cattle, which makes them reactive to anything unfamiliar (e.g., all the common distractions Grandin lists). If cattle are properly handled, however, and understand that their handlers will guide them, not hurt them, there is almost no balking at distractions.

To illustrate, here's a short video of cattle walking calmly past what Grandin assumedly would consider two major league distractions without balking:

Click [here](#) to view video.

The attitude that handlers should take towards "distractions" is that they won't be a problem. I (LL) have learned that the good pen riders and processors at feedyards don't care about distractions or even where people stand. The attitude the handler has towards potential distractions makes all the difference. For example, in one feedyard there were a lot of plastic bag shreds in the alleyway leading up to the tub that had fallen off the end of stock whips. One excellent handler, Clint Hoss, calmly drove cattle right over the bag shreds and into the tub with no balking, whereas another handler picked up all the bags before his turn in the alleyway because in his mind they were going to be a problem, and they probably would have. As Williams says, "You cause what you anticipate." When a third handler rotated into the position of moving cattle through the tub, he had extreme difficulty. There were no distractions present; he simply did not possess enough presence and good technique to move even small drafts of cattle straight to and then through the tub. Cattle would end up circling and running past him back to the holding pen. The importance of handler skill must be emphasized regardless of the design of the facilities or the potential distractions present in the system.

A good way to think about distractions is that they are merely something out of the

ordinary that can engage an animal's curiosity. It's not uncommon to see cattle experience curiosity which might be misinterpreted as a distraction. For instance, I (LL) would consider any significant change in scenery a curiosity. It is true that cattle often slow down when they see something different, but I perceive it merely as a curiosity or a time to evaluate whether they need to be concerned about the object or change in scenery. We *cannot* make the world free of changes in scenery and distractions, but we *can* work to understand the animals. For instance, when cattle are being moved through an alley that transitions from open sided to solid, an astute handler should increase their energy by about "1 mph" to encourage the animals past the transition. Animals that aren't panicked by the handler willingly do this, just as they will with most distractions. Animals on "red alert" and fearful of their handlers are much less likely to be cooperative, and much more likely react to transitions and distractions.

It's crucial to understand that the mental state of animals will have a huge impact on what causes them to balk. Panicked animals are likely to view everything as a threat and will be inclined to balk at anything unfamiliar. Also, animals behavior depends largely on prior experiences. If some had a prior bad experience with a distraction (e.g., being bonked on the head by a no-back) they may balk the next time they encounter a no-back even if they are in a calm frame of mind. Some distractions might involve guilt by association. Imagine the aforementioned cow getting bonked on the head. What if a loose chain was dangling from the no-back. That cow might subsequently balk at other dangling chains. Another example would be cattle that have been hot shotted into a squeeze chute balking the next time around. Some observers might erroneously conclude that the animal balked at the sight of the people standing beside the squeeze chute when it was the prior bad experience.

As noted, Grandin makes a big deal out of the little things, asserting that details are the key: "The single most important thing to remember



is that animals are afraid of tiny details in their environments.” [4] Tiny details do matter—and handlers should strive to understand their meaning and not misinterpret them—but the degree to which they matter depends on handler attitude and skill. If handlers make a big deal out of a little deal it will make it a big deal. Not making a big deal out of a little deal and handling cattle properly creates good cattle flow and can render distractions insignificant.

To illustrate, in the following photos a herd of weaner heifer calves are being driven into the end of an alley leading into the corrals. It wasn't until after the last calves had trailed into the alley that I (WH) noticed the flag. If one is to take Grandin literally, those calves would have balked at the flag and likely refused to enter the alley. However, the two handlers did not know the flag was there until we had the calves in the alley. Had we seen the flag and considered it a real distraction and believed that the calves would balk, we likely would have ramped up the pressure, gotten the calves out of a normal frame of mind, and otherwise caused what we anticipated. (Causing what we anticipate is an important insight and, as far as we know, original to Bud Williams.)



## SOLID SIDES

Grandin concedes that open sides on livestock handling facilities are acceptable under certain circumstances (i.e., the facility must be completely free of distractions and the handlers must be very sensitive to and work the animals' flight zones properly). [9] However, in most situations Grandin argues that solid sides in alleys, tubs, and snakes are essential to minimize distractions—such as people standing around the squeeze chute up ahead—which cause balking. This is especially important, she says, in large feedlots and abattoirs where there's a lot of activity. [5, 9]

Because “cattle emotions and behavior are controlled by what they see,” [7] Grandin strongly advises controlling what they see by making the sides of crowd pens and chutes solid. [1, 6, 9] This prevents animals from seeing outside distractions. “The principle of solid fences is like putting blinkers on a harness horse. The solid fences prevent the cattle from seeing people, vehicles and other distractions outside the

fence with their wide-angle vision.” [3] Logically, since research findings show that blindfolding can have a calming effect on restrained cattle, Grandin concludes that they don’t fear what they don’t see. Therefore, she reasons that animals will go through a solid-sided handling facility that blocks their vision and prevents them from seeing people and other outside distractions, which is especially important for wilder cattle. [5] Consequently, “Working cattle . . . through a handling facility can be improved when solid sides are added to existing open-sided fences to block their vision and prevent them from seeing people and other distractions outside the chute.” Additionally, Grandin believes that cattle feel safe behind solid sides. [6]

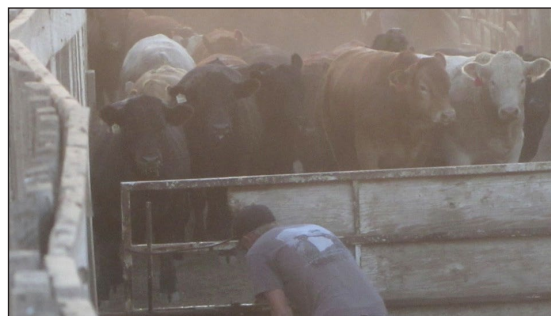
We challenge this rationale on five counts and believe that most, if not all, sides should be open, not solid. First, it’s not so much that “cattle emotions and behavior are controlled by what they see,” it’s how they *interpret* what they see, and that depends largely on their state of mind, which depends on how they are handled. If cattle are handled poorly, they are likely to interpret things they encounter in their man-made world as bad. If cattle are handled properly, they will trust their handlers, look to them for leadership and guidance, be emotionally fit, and interpret what they encounter as okay.

Second, as argued in the previous section, distractions are only distractions if they are so in the handler’s mind and if the cattle are not handled properly. We have had too many experiences of animals calmly moving through facilities in spite of numerous “distractions” that Grandin lists (e.g., vehicles, people standing in the wrong places, busy roads) to regard this as a serious problem.

Third, solid sides are designed to shield the cattle from the people and the people from the cattle, which Williams believed is wrong-headed. In LSLH we want to maximize, not minimize, contact with our animals. Consequently, solid-sides are not only unnecessary but counterproductive. LSLH is based on mutual understanding

and communication through proper body position. Therefore, they must be able to see us! Why would we want to hide from cattle in the first place? Aren’t we, as their handlers, supposed to be communicating what we want to them and guiding them through the system? If so, how can we do that when they can’t see us? From the LSLH perspective, we need the cattle to see us so we can use proper body position to communicate what we want so the animals can do what we want. Cattle can move well through a snake with the application of good technique (such as reverse-parallel), but solid sides make that application difficult, if not impossible.

Fourth, contrary to Grandin’s argument that it’s important to control what cattle see because they don’t fear what they don’t see, we’d argue the opposite. As Williams says—and our combined experiences tell us that he’s correct—cattle know when and where people are present, even if “hiding” behind a solid side, and to think that they are not affecting the cattle is naive. In fact, cattle may fear “hidden” handlers more than those that they can see because they can’t interpret their body language or intentions. I (LL) have observed cattle coming through a solid-sided facility and stop at the exact place where people were crouched down outside, ostensibly “hiding.” We believe that blocking an animal’s view of people can be even more frightening than simply seeing them. It’s like knowing there’s a rattlesnake somewhere in your living room but not being able to see it. Wouldn’t you feel safer and know where to be or go if you could see the rattlesnake and know what it’s doing? Consider this photo:



This handler may think that he is hiding from the cattle, but it's quite clear that they know precisely where he is. Part of the problem is that whenever people try to hide, they still want to see the cattle, therefore the cattle see them! Wouldn't the cattle be more comfortable if they could clearly see this handler and read his body language and intentions? Williams admonished us not to be "sneaky" around our animals.

Here's a short video clip of a cow entering a tub and zeroing right in on a handler who thinks he's hiding behind the solid side:

Click [here](#) to view video.

Fifth, Grandin's contention that cattle feel safe behind solid sides is unsupported by our observations and experience. It might be that some feel secure but many clearly do not. Our hypothesis is that cattle, being a prey animal, will increasingly become upset when their escape options are limited. For a prey animal that depends on flight for safety, it stands to reason that being enclosed in a facility where they can't see out, and they see no avenue of escape, that that must be very anxiety provoking. We have seen numerous instances of cattle experiencing extreme distress when enclosed in solid-sided systems (especially snakes), including thrashing about, trying to turn around or jump out, going down, sulling up, or flipping over backwards. Admittedly, this is primarily caused by handlers who unnecessarily frighten and panic animals which elicits such negative responses from them.

Solid sides are problematic for two other reasons. First, cattle moving from open alleys to solid-sided alleys (e.g., from an open alley to the solid lead-up to a tub) is a transition which often slows or stops movement. The following video illustrates this phenomenon:

Click [here](#) to view video.

This transition creates a challenge that the handler must deal with. The more challenges

present in a design, the more labor unfriendly the design.

A second problem with solid-sided facilities, especially high ones, is that if the handler needs to remedy a stall, he or she has to step up on a catwalk and encourage the animal to go forward from above. What could be more frightening than being in a confined space, not being able to see the predator, then suddenly the predator appears over you?

From the LSLH perspective, and based on our extensive experience with both solid and open systems, we believe that all alleys, crowd pens, and single-file alleys (whether curved snakes or straight chutes) should be open in farm, ranch, stocker operation and most feedlot settings. In short, open systems work better than solid-sided systems in operations where the handlers have even the slightest interest in properly handling their animals.

## CURVES

The reason for curved processing facilities, Grandin explains, is to take advantage of the animals' desire to go back where they came from, which requires a 180-degree curve. The combination of solid sides and 180-degree curves, Grandin asserts, allows for the easy movement of calm animals through the entire processing system.

We challenge this reasoning on four counts. First, although it is true that animals want to go back where they came from, as Grandin states, they primarily want to do this if that place was more comfortable than where they currently are going. In other words, animals want to go back to where they came from when they experience more pressure or feel more uncomfortable where they are going than where they came from (a core idea of Williams' that is employed with effectiveness in his system discussed below). If animals calmly move through curved systems as Grandin claims, there should be no desire on their part to go back where they felt more comfortable, hence the 180-degree curves are superfluous.



Second, if for some reason animals are uncomfortable with where we are trying to take them (e.g., into a tub) and they really do want to return to where they came from, that literally means that they will retrace their steps to do so. Going around a corner, in the animal's mind, is *not* going back where they came from; it's going around a corner into uncharted territory. Remember, as Grandin asserts, prey animals are aware of tiny details, and going forward and continuing around a 180-degree turn is a *big* detail, and won't be confused with backtracking. It's so different, in fact, that cattle are often unwilling to go around the curve and will stall. Consider driving your car and encountering a 180-degree curve with a high, solid wall delineating the curve. Wouldn't you slow down? This is exactly the effect that these curves have on the cattle; they approach with caution and slow down, which requires the handler to increase pressure to drive them around the corner. This problem is magnified if the surface is slippery, which brings up another challenge to a 180-degree curve, and that's maintaining proper footing. If increased pressure is required to move cattle through the 180-degree turn and the footing is slick (which is common in concrete alleys and tubs due to frozen, wet, or muddy conditions) it adds one more element of difficulty for the handler. Consider walking into a store and slipping and falling on a wet surface that has just been mopped. Do you really care about your shopping list anymore? Cattle who feel unstable in their footing do not stay in the frame of mind to calmly move through a frightening system.

Third, you do not "fool" animals into thinking that they are going back to where they came from with 180-degree curves. Do cattle actually think that if they go around such a corner that it will take them back to where they came from? We doubt it. We suspect that that is a case of anthropomorphic projection. We humans, with our cerebral cortex and consequent reasoning power, may correctly think that, but a cow? We ask the reader: In your experience with working

cattle through a single-file alley or chute, for instance, what does an animal do if it really wants to go back to where it came from? It tries to back up or turn around, right? It doesn't charge ahead with the idea that if it continues down this blind, curved alley that it will take it back to where it came from.

Fourth, if we take a cow's eye view, as Grandin rightfully advises, what do we see when we go into a solid-sided 180-degree curve? We see a wall, a large "bovine stop sign." Consider this photo:



Consequently, cattle frequently have to be driven with significant force around these turns. Grandin's systems are designed as "driving" systems; that is, the cattle must constantly go forward through various curves. The problem, however, is that they resist going forward toward solid walls—which is precisely what happens with solid-sided curves—so the handlers often need to drive them with increasing force through the system. However, if cattle are calm and working well for a handler who uses proper driving technique, they may move through the solid-sided system fine.

As a result of all these problems, solid-sided, curved facilities are not conducive to "easy movement of calm animals through the entire processing system" as Grandin claims.

From the LSLH perspective, alleys, crowd pens, and chutes tend to be easier for cattle to negotiate and more user friendly when they are open and straight. The authors have had extensive experience with both, and it is our experience that well-designed open and straight

systems are economical, effective, and handler- and animal-friendly.

Here's one illustration. On my (WH) family's ranch (Sieben Live Stock Co. in Montana) we had a solid-sided, curved chute (see photo below) that led to the squeeze chute. We had a terrible time getting cattle into and through this chute. I didn't understand why until I took Grandin's advice and looked at it from a cow's eye view. What did I see? A wall. Also, I realized that cattle were incapable of understanding that it was not a wall, but an alley that would convey them out the far end.



After attending a Bud Williams stockmanship school we tore out the old chute and replaced it with the open and straight one pictured below, built in short order with used materials on hand.



The difference was immediate and profound. The cattle easily and willingly entered the chute.

Quite obviously, in the curved chute they didn't see an exit; in the open and straight chute they did. Problem solved. I ask the reader: If you were a cow, which chute would you be more willing to enter?

## TUBS

A tub, the centerpiece of any curved, solid-sided processing facility, can be used to sweep cattle into a snake going to a squeeze chute, a loading dock, or a trailer load out. Grandin argues that cattle willingly go through a tub—assuming it is designed properly with solid sides, a 12-foot radius, and a 180-degree turn—because they are prevented from seeing distractions and they think they are going back to where they came from.

As argued above, from a cow's eye view (see photo below) entering a tub is like running into a wall which often results in cattle slowing, stopping, and wanting to turn back. Feeling the pressure of the enclosed tub, cattle often do want to go back where they came from, as Grandin claims, but it's not around the 180-degree corner, it's back around or over the top of the handler!



As far as preventing cattle from seeing distractions—a questionable concern addressed above—the real distraction is what the cattle see, which is a wall. To get rid of the wall effect in this tub, we cut out the top half and replaced it with pipe so the cattle could see through it, which facilitated entry.





Here's a short video illustration of the difference:

Click [here](#) to view video.

Another problem with tubs is that they force the handler to work it from the outside arc. In fact, most tubs have catwalks on the outside arc for the handler to stand on which puts them out of proper position (explained below).

### **SINGLE-FILE ALLEYS (A.K.A. CHUTES, SNAKES, RACES)**

Grandin argues that single-file alleys should (a) have solid sides (to avoid distractions), (b) curve 180 degrees (so the animals think they are returning to where they came from), and (c) be relatively long (to take advantage of “natural following behavior”). [3] Curved, single-file alleys, or “snakes,” work for two additional reasons, according to Grandin: “First, it prevents the animal from seeing what is at the other end of the chute until it is almost there. Second, it takes advantage of the natural tendency to circle around a handler moving along the inner radius.” [1]

From the LSLH perspective, single-file alleys need to be open so the cattle and handler can see each other and communicate (i.e., the handler is communicating through proper body position and movement what they want the animal to do, and the animal is communicating back to the handler whether it understands). Furthermore,

open chutes look open, even inviting one to enter, whereas solid-sided chutes look closed, claustrophobic and uninviting (see photo below).



Second, chutes should be straight. The notion that curved chutes facilitate cattle movement because they allegedly think that they are going back to where they came from has already been challenged. Furthermore, consider this: Cattle under normal conditions (e.g., open range) trailing out by themselves (e.g., to water or fresh feed) go straight, not in curves. Also, when they walk to a destination and back, it's in straight lines; they do not move in 180-degree arcs to return to where they came from.

Third, we believe that Grandin's contention that “facilities should be designed with relatively long single-file chutes to take advantage of following behavior” [6] needs to be challenged. Would you prefer to stand in a long or short line at the airport? Are you more cooperative after standing in a long or short line at the airport? Do you enjoy flying more if you were made to stand in a long line rather than a short one? Even Grandin says that “bison become severely agitated while standing in line.” [6] Guess what, cattle do to! If the premise of long snakes is to take advantage of natural following behavior, it is paramount that handlers maintain constant movement of cattle through the system. If cattle stall in the snake, or if there is a pause between drafts of cattle being sent through the tub, cattle will lose sight of the animals in front of them

because of the solid-sided curve. When this occurs there is no longer an opportunity for following behavior and often the animals stall as if lost; some even try to back out. Consider this lost soul:



When this occurs, the handler needs to resume forward movement. This is difficult in the many systems that use conveyor belting on the top of the solid side. In these systems the handler must pop up onto the catwalk and peer under the conveyor belt flap and encourage the animals to move forward. Since the handler can't simultaneously hold the flap up and use reverse-parallel technique, the handler generally pushes the animal forward from the rear. When the handler is trying to get an animal to go forward from a rear end position, that often creates a block to the animals following the stalled animal, hence perpetuating more stalls. With open sides, none of this happens.

Also, when animals are frightened, resistant, or confused—hence more challenging to work—and not flowing well through the system, is it easier to remedy the situation when there are a lot of animals stalling or only a few? The point is that the longer the snake the more animals there are to contend with, hence it's inherently more difficult.

When I (LL) do systems assessments, if cattle are challenging the handlers (for reasons known or unknown) one of the initial troubleshooting

measures is to reduce the size of the draft. The draft size is then increased one at a time until the ideal draft size for that set of cattle in that facility is determined. Sometimes it is found that small draft sizes work best. In that case long snakes are a waste of facilities. Additionally, when processing protocols are long (e.g., branding, incoming processing) it is ideal to have a shorter snake so that wait times are decreased and cattle remain cooperative. This is especially important with cattle that are being treated. Often they are pulled when they are severely ill and then made to stand in the long snake before being treated, which compounds the stress, which is counter-productive for sick animals.

Some facilities designed by Grandin have very long snakes. This has the undesirable consequence of taking movement out of the cattle due to constant “stop and go,” which actually teaches cattle to stall. An additional challenge with extra long snakes with two arcs is that it's difficult for handlers to work the cattle that are stalled in the outside arc if the handlers are properly positioned on the inside of the arc. Handler position on the inside of the arc is ideal because with minimal head movement the cattle can easily keep the handler in view. When a handler is on the outside of the arc the cattle have to turn their heads (often back and away from the target; i.e., the squeeze chute) to keep the handlers in view which does not facilitate cattle flow. Snakes with more than one arc require additional labor to position handlers in the proper locations.

An obvious advantage of straight single-file alleys or chutes is that animals never lose sight of the animal they are following. Also, the last cow or two serves as “bait” to help draw in the next draft of animals into the chute. If needed, the squeeze chute operator can hold the last animal until those entering the chute from the crowd pen can see it. At that point the operator releases the animal and the next animal in line sees it “escape,” which encourages it entering the chute.

Grandin has advised putting belting above the solid sides on snakes, ostensibly to minimize

distractions. This is really troublesome. The real distraction here is what I (LL) call the “predator distraction.” This is the ultimate in horror! Cattle in the snake *know* that a person is outside of the snake, so when the person “pops in” from above to shove the animals forward, it is very frightening. Furthermore, it completely blocks the animal behind the one the handler is shoving forward, thereby disrupting flowing the remaining cattle forward.

Grandin recommends double-file or side-by-side chutes. [6] This is not necessary. If we create proper cattle movement, single file is fine. One problem with a double-file chute is that if the animals stall, it is difficult for the handler to access the outside lane without disrupting the flow in the inside lane. It is for this reason that Williams did not recommend double-file chutes.

Grandin also recommends V-shaped snakes with catwalks, which are necessary due to the tall, solid sides. [6] We find both problematic. V-shaped snakes are not adjustable and do not fit all classes of cattle. Therefore, how do you safely accommodate all classes of cattle? Small animals (e.g., early weaned calves presented for preconditioning) can turn around. Short, small-framed, thick cattle (e.g., bred and near term due for scours vaccination) or near finish (e.g., at re-implant time) in the feedlot can get wedged. Furthermore, we suspect that cattle are less apt to move willingly into and through V-shaped snakes out of fear that the narrow bottom will interfere with the free movement of their feet; something that is exceedingly important for prey animals.

Tall, solid-sided snakes require catwalks. We find catwalks challenging and not user friendly. Catwalks put the handler above the animal which is a predatorial position that unsettles and stresses them. Furthermore, standing above a cow tends to impede movement. Due to the horizontal design of bovine vision, they have to lift their head to look up to see things above them, unlike humans. The

problem is that when they lift their head their feet tend to stop. Grandin admonishes us not to build overhead catwalks, but *all* catwalks put the handler overhead when the sides are solid. Also, in Grandin-designed systems many catwalks are on the outside of the arc which is precisely where a handler should *not* be. To effectively move cattle ahead the handler needs to work the inside arc (for reasons described below). Another problem with catwalks is that it takes considerable effort to repeatedly step up and down off them. Consequently, handlers are prone to remain on the catwalk instead of getting off of it where they can use proper body position more effectively. Lastly, in wet, freezing weather, metal catwalks become slippery and unsafe for handlers.

### SQUEEZE CHUTES

“By definition,” Grandin explains, “anytime a human gets close enough to a cow to give it a shot or provide veterinary care, that human has violated the cow’s flight zone.” [6] Therefore, she recommends preventing animals from seeing people deep within their flight zone as they enter the squeeze chute by blocking their vision with either solid sides (even cardboard will do) or louvers. [3] Also, people at the squeeze chute should stand motionless and not look at the incoming animal; moving people and staring eyes are threatening. Additionally, the pump and motor should be located away from the squeeze to minimize noise. [5]

So, the animal is to be isolated from everything and then get bit by the rattlesnake? We believe that it’s less stressful for animals if they know what’s coming and not be surprised.

We concur that it is wise not to “stare down” the cattle when encouraging them to enter the chute; this is called “eye stalk” and can discourage cattle from entering the chute. More fundamentally, the idea of needing to hide behind solid sides or louvers on squeeze chutes needs to be challenged. Even if it’s possible to hide behind louvers during an animal’s first trip

through a squeeze chute, it's certainly going to suspect that you're there on its return visits. Again, wouldn't you rather know where the rattlesnake is? Consequently, you might as well let the cow know that you are there and not make it guess. Arguably, not knowing what's hiding behind the louvers is more stressful than knowing. Furthermore, we've observed that crews will often leave a panel open on the side of the chute for certain procedures, like branding, which has not hindered the flow of cattle unless they were in a state of panic.

Even more fundamentally, a critical point that Williams makes, but is overlooked by Grandin, is that cattle don't mind going into a squeeze chute or what happens to them once there; what they mind is how they are treated and handled *before* they ever get there, and that starts with how they are brought into the corral and every step in between. If they are treated well and handled properly, good movement is created and maintained throughout the system, they will usually willingly walk into a squeeze chute, stand there, then calmly walk out.

Williams also stressed the attitude of the handlers at the squeeze chute. He wanted people to enjoy working the animals, to have a positive attitude, to learn proper technique (e.g., slow and smooth injection technique; not a snake strike), and to focus on quality of work (e.g., working together as a coordinated team and to master proper cattle handling technique).

Entering the squeeze chute should be viewed as a transition. What happens at transitions? If animals don't have enough good movement to cruise right past them they may hesitate and try to figure it out. So, if the people handle the cattle properly (even giving hesitant animals a moment to examine and get comfortable with it) and keep them in a normal frame of mind, the cattle will usually enter smoothly. If cattle have had a prior bad experience or are panicked, they may require more time and encouragement. Each situation needs to be assessed and handled appropriately.

As far as louvers, they may be good for some cattle and some crews but not others. Ideally, when cattle have good movement and are comfortable with the handlers, louvers are unnecessary. If louvers were easily removable; they could be considered a tool. Our main objection to louvers is that they are an extension of the argument for solid sides, which we challenged above. It confounds us why handlers want to hide from their cattle and prevent cattle from seeing them, which makes effective communication impossible. Skilled people at the squeeze chute can use their body position—as they do everywhere else in a processing facility—to effectively communicate with and move animals. Furthermore, the squeeze chute operator can do a much better job of checking the movement of animals coming in too fast (e.g., by lightly squeezing them with the sides or partially closing the head catch as they enter) if he or she can clearly see them entering.

Although the question of the effect of squeeze chute noise on cattle is unresolved—Grandin believes that it has a negative effect, Williams does not—the authors do agree with Grandin that all facilities and equipment should be engineered for quietness. [10] Because cattle have much more sensitive hearing than humans to higher frequencies (i.e., human and cattle hearing are most sensitive from 1000-3000 Hz and 7000-8000 Hz, respectively), [11] it makes sense to reduce unnecessary noise, such as by placing squeeze chute pumps and motors away from the working area. An additional benefit is that people can interact with cattle and each other more effectively when there is no extraneous noise to contend with. Consequently, conscientious facility design should include considerations to minimize noise.

## TUBS VERSUS BUDBOXES

Grandin (personal communication, Nov. 18, 2013) acknowledges that BudBoxes (see *The BudBox: History, Principles, Design, Operation* in this issue) are fine in certain applications



(e.g., farms and ranches where there are no outside distractions). She believes that BudBoxes cost less but take more skill, whereas tubs cost more but take less skill. Additionally, she claims that tubs are safer than BudBoxes.

An important point that needs to be emphasized is that any facility is workable as long as the people learn how to make it work. Williams demonstrated that he could make any facility work by training the people how to handle their animals better. Consequently, we believe that the primary emphasis should be on proper animal handling or stockmanship skills rather than mechanics.

Considering a multitude of experiences with tubs and BudBoxes, we are strong advocates of the latter. We believe that BudBoxes are not just “fine in certain applications,” but *most* applications where handlers have even the slightest regard for proper cattle handling, except for abattoirs. By the time animals get to the abattoir the personnel are dealing with animals from anywhere and everywhere that have experienced all kinds of different handling, may be traumatized, and they are at their biggest and strongest. Furthermore, abattoirs tend to have a high turnover rate in an often unskilled, and poorly trained labor force. Consequently, a system that shields the animals from the people and the people from the animals is warranted. In this regard, Grandin is to be commended for the good work she has done and the positive influence she has had on packing plants.

However, we think it is mistake not to differentiate between that application and the other layers of the livestock industry. Feedyards, ranches, stocker operations, and farms, we believe, are ill-served by unnecessary, expensive, often ineffective tub systems when there is a more cost-effective and efficient alternative—open and straight systems. Unlike abattoirs that have animals only a matter of hours and handle them once before they’re gone, farms, ranches, stocker operations, and feedyards have their animals for extended periods. Therefore, they

should focus on cattle handling for welfare, performance, and safety reasons. If stockmen care about their animals, they should be concerned about their stockmanship.

Williams emphasized the quality of the human-animal interaction and the perfection of proper technique. Realistically, as noted, Grandin has had to design facilities where there is no time for human-animal interaction to shape the behavior of cattle (i.e., packing plants), and there is usually little interest or no training opportunity for the handlers to improve technique. Packing plants also run on a tight schedule where large numbers of animals need to be processed and there is no time for stalls. Designing facilities for packing plants with the aforementioned constraints is where Grandin excels. What must be differentiated is that feedlots, ranchers, stocker operations, and farmers do not have the same constraints as packing plants. Even feedlots care for cattle for 75 to 200+ days, which is plenty of time to work on the human-animal interaction and develop good animal handling skills, especially given the fact that pen riders interact with pens of cattle on a daily basis. There is a movement within the feedlot industry to handle cattle in a low-stress manner, and many operators are aware that mishandling cattle is costly and labor intensive. Likewise, many ranchers, stockers and farmers are interested in improving their cattle handling skills. Additionally, consumer interest in humane food animal production is helping drive industry-wide interest in LSLH techniques.

Unfortunately, the trend is towards mechanization, not stockmanship. The advent of sophisticated livestock handling systems, in an effort (some think *misguided* effort) to make livestock handling more efficient and safe, is eclipsing stockmanship. This is unfortunate. As Bud Williams has said, “We are heading in the wrong direction. We should be looking for behavioral solutions, not mechanical solutions” (Bud Williams’ Stockmanship School, Ft. Keogh,



Montana, Sept. 2005). Similarly, Smith critiques “‘high-tech’ engineers disguised as Animal Scientists” and objects to the trend for “more and more mechanical solutions . . . to move animals from one place to another as the bulk of animal handlers in large facilities become increasingly untrained or, at best, ill-trained.” [13]

Stockmen at all levels of the livestock industry have fallen under the spell, erroneously being led to believe that they need a mechanical fix to solve livestock handling problems during processing, so what do they do? They buy tub systems, not knowing that there are more cost-effective alternatives: (a) learning to handle their animals better so they work adequately through their existing system, (b) making a few modest changes to their facility (e.g., a new gate or two) or changing cattle flow, or (b) retrofitting their system with a homemade BudBox instead of an expensive tub. The photo below is a perfect illustration. Here we see a small operator who added a tub to his existing facility when he could have easily retrofitted a BudBox with leftover lumber and posts he used to build his corral.



This new system may work fine. (Whether it will ever pay for itself is another question.) If it does not work fine, the owner may end up doing what owners all over the country are doing—replacing their tubs with BudBoxes.

Here’s another example, but of a larger

operator. Again, a simple, cost-effective retrofit with a BudBox would cost next to nothing compared to the expensive tub system, and most likely would work better.



We do not believe, as Grandin claims, that BudBoxes take more skill to operate than tubs. In many instances, it takes a great deal of skill to get tubs to work, without which handlers resort to massive pressure at the expense of the animals and efficiency. Also, in our experience, it takes no longer to teach someone how to work a BudBox than a tub. In several instances I (WH) have explained the principles and technique of working a BudBox, demonstrated with one draft of cattle, then had the student successfully and easily do it. Additionally, having used both tubs and BudBoxes, we think the latter are more forgiving than tubs; that is, you don’t need to be as precise and you can recover more easily from mistakes. This may be because cattle aren’t forced through the system and may be more comfortable in a less confined setting. Lastly, in the experience of Clint Hoss, who has spent a great deal of time in both tubs and BudBoxes, “It takes more energy to work a tub than a BudBox to get the same result.”

A good way to examine the differences between tubs and BudBoxes is to put them “under the microscope,” so the speak, and what better way to do this than to work *very* sensitive animals through them. I (WH) recently asked the general manager—a good stockman and Bud Williams student—of a large bison operation

for his experiences in processing bison. He said that he did not like tubs for the following reason: When you put bison in a tub and get on the catwalk, they will look up and fixate on you and there is no way to direct their attention to the opening of the snake without the liberal use of hot shots and ropes. He ended up tearing out the tub, replacing it with a modified BudBox, and the bison worked well. Furthermore, he found that tubs take much more skill to operate well than a BudBox and are much more easily abused than BudBoxes (i.e., you have captive animals in a tub that can be readily hot shotted and otherwise abused without worry, which you cannot do in a BudBox).

Regarding Grandin's claim that tubs are safer than BudBoxes, that is not supported by our experience. It is true that people can get hurt, even killed, in any system, particularly if they don't use the system correctly or handle the animals properly (although genetic temperament and prior experience are factors). The reader might ask why the people were in the tub? The answer is because that's the only way they could get it to work. Quite often the lead up to the tub is absent of escape gates, which is the place that commonly puts the handler at risk for harm. Escape gates are desirable in all facilities. Handlers should always be aware of the signs that cattle exhibit when they are uncomfortable, unsettled, frightened and aggressive. An aware handler is one that has the best chance of avoiding injury. In any case, well-designed facilities should include escape gates.

Also, there's an inherent safety hazard with solid-sided facilities: You can't get out! I've (LL) been in one system that they called "the green mile" because there was no exit, no escape, and it went on forever. At least in a BudBox you have a toe hold and, ideally, an escape gate.

An advantage of the BudBox over the tub is that it avoids the "wall effect." As noted above, from the cow's perspective, entering a tub is like running into a wall, whereas entering a BudBox is open, even inviting.



*Cow's eye view entering a tub*



*Cow's eye view entering a BudBox*



*Cow's eye view entering another BudBox*

In my (WH) experience, driving animals into the tub shown is consistently met with resistance, whereas cattle never resist going into either of the BudBoxes shown. In contrast to open and straight BudBox systems, tub systems tend to be "bovine obstacle courses," often uninviting, confusing, and difficult to navigate.



In many outfits we've seen frustrated operators replace their tubs with BudBoxes with excellent results. Here's one experience of a feedyard in Canada as witnessed by Dawn Hnatow: "It was funny watching at Vee Tee Feeders when we tore the crowd tub out and put in a BudBox at the load out. The look on the truckers' faces when they pulled up and looked at that! But it didn't take very long and they were all about that BudBox. They didn't have to do anything but close the gate! There was no fightin', or gettin' run over or knocked down. I loaded lots and lots of fat cattle out of there all by myself."

Another advantage of the BudBox over the tub is that, if operated properly, you get a definite mind change in the animals to go back to where they came from, which you do *not* get in a tub. As explained above, animals do not exit a tub (or any other curve) because they think they are going back where they came from. In a BudBox they clearly do. Then, once that mind change occurs, it is used to advantage to carry the animals easily through the rest of the system (see *The BudBox: History, Principles, Design, Operation* in this issue).

BudBox systems also take less space than tub systems. This is very important in operations that have limited space, or if the operation wants to construct a building over the processing facility. Grandin recommends placing a building over the working facility, but never at the junction between the tub and the snake. [6] This happens all the time! Few outfits can afford buildings to cover all these curves, so guess where the building goes? A whole BudBox system (i.e., alley, BudBox and chute) requires only a small, hence affordable, easy to clean, and inexpensive-to-heat building.

Grandin argues that "animals move through a solid-sided curved chute more readily than through a straight chute because, entering from the crowd pen, they are not able to see people standing around the restraint device." [6] The first consideration is that there should only be the necessary personnel working the cattle, and

the people at the squeeze chute be calm and quiet. Second, the real issue is not the "people standing around the restraint device"; it's how the people handle the cattle. If they handle the cattle properly they will not balk at people, or other distractions, up ahead.

## ANIMAL HANDLING

Grandin rightly stresses the importance of good animal handling and animal handling training: "When I first started working on livestock-handling facility design, I thought I could clear up all the inherent problems with an engineering solution. I soon learned that although well-engineered facilities provide the tools that make calm, low-stress handling easier and safer, they do not replace management and gentle handling training." [6]

Many of Grandin's ideas on and techniques of animal handling came from Bud Williams, who she recognizes as a "highly, and miraculously, effective" livestock "handling expert." [6] Grandin attended several of Williams' stockmanship schools. However, the ideas and techniques that she presents are her interpretation, and sometimes misinterpretation, of his material. When it comes to a study of animal handling we recommend that the interested reader and serious stockman go to the source and study Williams' stockmanship directly.<sup>4</sup> So, we will not do an extensive review and analysis of her interpretation. However, there are a few points that should be clarified here.

Regarding the point of balance—"balance point" for short—Grandin believes that it is at the shoulder. Although this is generally true, we concur with Williams that the balance point can vary with the animal and be anywhere from the nose to the tail. The key, according to Williams, is to read and respond to the individual animal;

<sup>4</sup> This is best done by studying Williams' videos available at [www.stockmanship.com](http://www.stockmanship.com) and Volume 1, Issue 1 of the Stockmanship Journal, available at [www.stockmanshipjournal.com](http://www.stockmanshipjournal.com).

they are all unique. This is the key to successful, proper cattle handling. Treat each animal and herd as it requires; if we learn to do that we minimize our struggles and optimize our production event outcomes.

Grandin contends that Williams' zigzag motion (that is used to gather and drive animals) works because it triggers an instinctual tendency of herd animals to form a loose bunch for protection under the threat of a predator. [12] Williams disagreed with this notion because he never thought in terms of predator-prey; he thought in terms of how to move properly to get a certain effect. What drives animals ahead, he found, is moving in a zigzag pattern with straight lines at a forward angle that applies effective pressure into animals' sides, which is not the windshield wiper pattern advocated by Grandin. Furthermore, a good handler does not mimic predator movements as Grandin advises; rather, a good handler is a leader who tells the cattle to get together and that we're going someplace.

Grandin states that "handlers calmly simulating nonthreatening but predator-like movements will have little trouble moving animals through chutes." [6] Why don't the handlers just learn how to use the system they are working and how to drive cattle properly? If they do, there's no need to act like a predator, then pretend that they aren't one!

"Extremely tame animal herds with little or no flight zone usually respond best to being led instead of herded," according to Grandin. [6] If you buy into this you don't buy into Williams' LSLH. Animals that are led *choose* whether to follow. They are *not* working for a handler and they do not understand how to take guidance from the handler. In other words they do not know how to be driven (probably because the handler doesn't know how to drive animals). This leads to extremely stressful situations for the animals because they are used to doing whatever they want and understand nothing. So, for example, when pairs are led into the corrals (at least the ones that choose to enter)

for weaning, they usually experience chaos because the handlers don't know how to drive or properly handle cattle, and the cattle don't know how to be driven. Consequently, the handlers resort to force, which escalates until the calves and cows are driven apart, then the calves are mashed onto a truck or trailer and transported to a sale barn for more mashing.

When working (e.g., driving) cattle, Grandin advises a "slow walk only." [6] Those who observed Williams work cattle were often surprised at how fast he walked and how much pressure he put on cattle. He would do what he needed to do to communicate what he wanted to the animals and to apply effective pressure. If that meant a real positive, fast walk he did so. A common misconception about LSLH is that everything has to be slow. This is not the case. We can move fast around animals; the key is that they don't feel threatened or mashed. (For a discussion of this misconception and others see *Low-stress livestock handling: Mapping the territory* in Volume 1, Issue 2.)

We think the following diagrams that Grandin has published widely are correct:

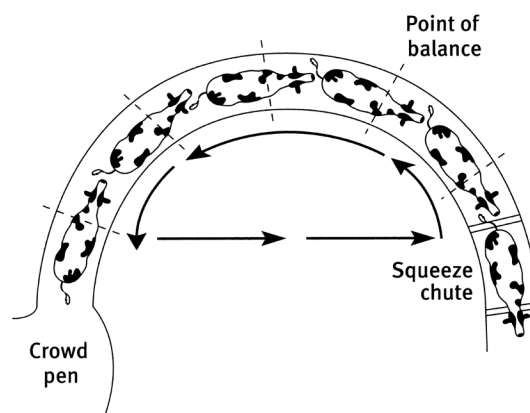


Diagram from **Humane Livestock Handling**, T. Grandin & M. Deesing. Used with permission of T. Grandin.

We agree with the logic behind this schematic; that is, that as the handler walks front to back (what we call "reverse-parallel") and

passes the balance point of each animal, it will move forward. Of course, for this to work it requires that the animals be able to see the handler. For this reason, we assume, Grandin has acknowledged that snakes with the top half of the inside arc open works well. [9] Also, natural following behavior is capitalized on here as well; at least if you have good movement and there are no large gaps between the animals. If you have bad movement, meaning that the animals are upset and not in a normal frame of mind, they are likely to stall and often startle at anything unfamiliar to them. The return path depicted is correct because it is essential that the handler return outside of the animals' flight zones. A common mistake is for the handler to return by retracing their path, which is a back to front (what we call "forward-parallel") movement that slows and stops movement.

Surprisingly, a schematic in Grandin's popular **Humane Livestock Handling** book has the handler working the outside of the arc. This is problematic because the handler, especially if he or she uses a flag, will pull the attention of the cattle away from the intended target (the snake entrance), thereby slowing, even stopping movement, which creates confusion for the cattle and a challenge to the handlers. Handlers should *always* work the inside arc of a snake.

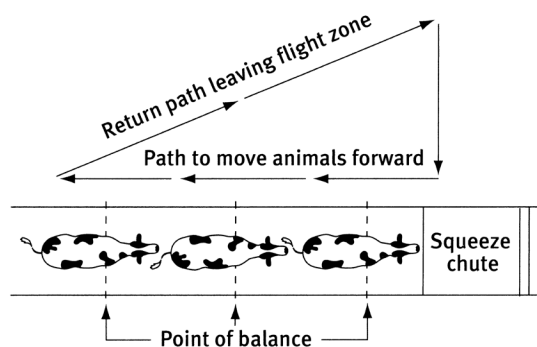


Diagram from **Humane Livestock Handling**, T. Grandin & M. Deesing. Used with permission of T. Grandin.

We also agree with this diagram for the same reasons as stated above. Bud Williams taught the same pattern when he began teaching in 1989 (Guy Glosson, personal communication, Dec. 16, 2013).

One final note on animal handling that needs clarification, and that does not come across in Grandin's writings, is that working animals is a very fluid, continuously changing process based on feel. "Feel" was as important to Williams as it was to the great natural horsemen, Tom Dorrance and Ray Hunt. By understanding, using, and being true to Bud's concepts and techniques, you can always accomplish the task you set out to achieve. But, how you apply those concepts and techniques varies, depending on such things as the previous experience of the cattle, the disposition of the cattle, the immediate conditions (e.g., facilities, level of exhaustion or stress, weather, geography). So, understanding LSLH basics and adjusting as needed to what the cattle need is crucial. Doing the same thing every time will not work every time in every situation. Imagine using the same body language and cues, such as spurs, on a very sensitive horse and a dull horse. The effect will be quite different. So, do we use spurs never, always, or when necessary? Williams was a "when necessary" advocate. It seems that Grandin is more "black and white" (e.g., never use spurs because they're bad, or always use spurs because they're necessary).

Learning how to become a highly skilled cattle handler is a lifelong process. If handlers possess the desire to attain a high skill level, and are willing to always pay attention to the behavior of the cattle and how they respond to us, there is no limit to what they can achieve. If handlers simply want to effectively do their jobs, understanding the basics of cattle behavior and properly applying the principles and techniques of LSLH will be quite rewarding. The only inputs are discipline and effort.



## CONCLUSION

Temple Grandin is due enormous credit for her monumental efforts in increasing awareness of animal welfare—both within the industry and the public sector—including the fact that cattle are sensitive, thinking beings with emotions and therefore deserve humane treatment and proper handling. She also is due credit for her significant influence on systems design and animal handling at abattoirs. We agree with and support both her positions on animal welfare and her abattoir systems. We do challenge, however, the cost-effectiveness and appropriateness of tub systems for farms, ranches, stocker operations and feedlots.

We have seen some tub systems that work well and many that do not. Grandin argues that the systems that don't work well are due to one or both of two factors: either they were designed wrong or the people aren't trained properly. The latter is generally the case, but there are several design elements that make solid-sided, curved systems very challenging, as discussed above. Furthermore, the facts that cattle (a) don't think that they are going back to where they came from when they go through a 180-degree curve, (b) tend to slow down when they encounter solid-sides, and (c) naturally travel straight and not in curves, seriously challenge Grandin's basic principles for why solid-sided, curved systems work. Additionally, these systems are inimical to good stockmanship because they impede effective communication.

One problem is that these systems are perpetuated and applied in inappropriate settings (e.g., ranches) because many livestock operators turn to the local farm and ranch supplier and rely on their salesforce to "help" them select a cattle handling facility. Many of these pre-fab systems—which salesmen are all too eager to sell—are poorly designed and incorrectly labeled as Grandin systems. We applaud Grandin for developing design criteria and materials (much of which is available

free on her website, [www.grandin.com](http://www.grandin.com)) that can assist appropriate operations (e.g., abattoirs) with facility design. It was the purpose of this article, however, to challenge some of Grandin's design principles and features, and provide an alternative view to what constitutes economical, cattle- and handler-friendly facility designs.

Grandin claims that her systems are "efficient, economical, animal- and producer-friendly," reducing the time spent processing cattle by up to 50% while reducing labor. [6] That may be true with some of her systems but certainly not all. In our experience, many tub systems create frustration and challenge for the handlers, are frightening to the animals, and are costly and labor intensive. Furthermore, we have seen instances where converting from a tub system to a BudBox system significantly reduced processing time and labor.

The most important thing is that stockmen need to take care of their animals and learn how to handle them properly. Animals are not assembly line parts. Animal husbandry, which has been eclipsed by animal science, needs to be resurrected, and we need to go beyond trying to solve all of our problems with injectable products and mechanical "solutions" to behavioral problems. LSLH has the potential for immensely beneficial outcomes with minimal, if any, inputs, which is always welcome in the livestock industry. When we start taking care of our animals and learning how to handle them properly, our livestock handling systems, whether of Grandin or Williams design, will be much more effective and efficient.

We advocate an emphasis on animal handling training and skill building which is good for the people, the animals, and the operation. It's a win:win:win. The people win because their jobs are easier, more interesting, rewarding, even fun. The animals win because they are handled better, and they are healthier and happier. The operation wins because it runs more efficiently, effectively, and profitably.

In sum, Grandin's "aim is to create the most effective livestock-handling techniques and handling facilities as possible." [6] We believe that has already largely been accomplished by Grandin at the abattoir level, and Williams at the feedyard, ranch, stocker, and farm level.

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# A Response to Hibbard and Locatelli

by Temple Grandin, Ph.D.

*Editor: Given that we share a common concern with Dr. Grandin for the welfare and proper handling of livestock, and given that we desire a mutually respectful and rewarding dialogue in which we articulate, discuss, and hopefully remedy some differences for the ultimate benefit of the industry and the animals, we sent her a draft of our article for comment. This is her response.*

**Distractions.** The first work I did in the early 1970s was observations of how cattle reacted to distractions. The handling on feedlots and ranches was rough and removing distractions improved movement. In meat packing plants, removal of distractions, such as reflections on shiny metal, hanging chains, and lighting a dark chute entrance, greatly improved cattle and pig movement. In packing plants, there is not enough time for a stock person to get the cattle accustomed to them. I agree that if a person has worked with his/her own cattle and developed a relationship with them, distractions become less important. Dairy cows that go into a milking parlor everyday will walk over and ignore distractions. Cattle handling has improved over the years, but at many places, removal of distractions will usually improve cattle movement.

**Stockmanship.** I agree with the authors on the need for people to learn better stock handling. I get very frustrated with many people who are not willing to spend time to learn low-stress methods. For 40 years, I have told people not to overload the crowd pen and many people still jam too many cattle in. This principle applies to all types of crowd pen designs. In too many places, employers overwork and understaff their operations to the point that people become too tired to do things right. To make change requires managers who are serious about animal welfare.

**Solid versus Open Sides.** I have changed some of my thinking on this. Recently in Australia, I did a demonstration with a curved chute that had a solid outer perimeter and an open inner side. This design is on p. 214 of the second printing of my book **Humane Livestock Handling**. To make this work, people have to stay back out of the flight zone until it is time to move the cattle. If handlers stand too close, the cattle will start to become agitated.

In packing plants and truck loading ramps, which have lots of vehicles and people moving around them, solid sides will help facilitate movement and make them work effectively. The pictures in the article shows facilities with open sides that are in a field with no big distractions, such as moving vehicles and extra people.

**Curved versus Straight Chutes.** We have differences of opinion on curved versus straight chutes. First of all, the design of a facility becomes less and less important after a rancher or stocker operator has spent time with his/her cattle practicing low-stress methods. One advantage of a curved single-file chute is that cattle entering the chute from the crowd pen cannot see people standing next to the squeeze chute. To promote following behavior, curved chutes **MUST** be laid out correctly so the animal can see a minimum of two or three body lengths up the chute when it is standing at the chute entrance. Cattle do move in a circle around a person. When cattle enter the single-file chute from a Bud Box, they circle around the handler who is standing in the Bud Box.

**Length of Snake.** The designs I have with very long snakes (single-file chutes) are for meat packing plants. In large packing plants, cattle move more quickly through the system

compared to ranch handling. The chute length is required to provide handlers time to refill the crowd pen. My designs for ranches and feedlots have much shorter single-file chutes.

**Reaction to Squeeze Chute.** I agree that how cattle are handled BEFORE they get to the squeeze chute is very important. Cattle that are handled calmly before they get to the squeeze chute will be calmer in the squeeze. Unfortunately, I have observed cattle that were so badly treated in the squeeze chute that they absolutely refused to enter it in the future.

**Point of Balance.** In the second printing of **Humane Livestock Handling**, I modified the description on p. 36. I explain that when a person is up close to an animal in a chute, the point of balance is at the shoulder. When the person is further away, the point of balance may move forward.

**Movement Patterns for Moving Cattle in Single-File Chutes.** I am pleased that the authors liked my diagrams. These movement patterns are based on my own work in feedlots. Some people have criticized the use of diagrams because they do not work in all situations. I agree, but diagrams form a starting point that helps people to learn.

**Round Crowd Pen versus Bud Box.** Both systems will work and both systems MUST be laid out correctly. The Bud Box is economical to build but more skill dependent. It is easy for a skilled handler to use, but it would be likely to work poorly in places with high employee turnover and little training. A well-designed round crowd pen is more expensive but it requires less skill to use. Both designs MUST NEVER be overloaded. Good handling will require more walking to bring up smaller groups. I have a new design on [www.grandin.com](http://www.grandin.com) where catwalks are eliminated.

**Conclusions.** Everyone who is interested in cattle handling wants to improve how animals are treated. Unfortunately, a high percentage of people who work cattle are not willing to spend the time to adopt all the low-stress methods described by the authors. There are differences of opinion on methods to move cattle such as herding or leading. The most important thing is the outcome. The outcome should be calm orderly movement. When cattle are being moved between pastures, it is essential that there is controlled movement through gates to prevent young calves from getting separated from the cows.

Another factor that is effecting cattle handling is fifteen years of producers selecting for a calm temperament. Many research studies show that cattle that have a calmer temperament compared to their herd mates will gain more weight. Several breed associations have temperament EPD's. Herds that have been selected for temperament will be easier to handle in less elaborate facilities. There may be differences of opinion on certain things, but everybody who is involved in improving how cattle are handled want to improve animal treatment. The cattle would benefit greatly if everybody who works in the field of low-stress handling would promote their practices in a positive manner.