# K1-K1W TECHNIQUE

Richard Fox (Photo Courtesy of Pyranha Mouldings, Ltd.)

# K1 - K1W TECHNIQUE

## GENERAL REMARKS

This chapter is based heavily on a study of Richard Fox's technique. That is because at the time of writing, I considered him to be the best technician in the K1 class. He does, however, represent only one type of style and I want to take a moment to sensitize the reader to the differences between his and others.

All whitewater paddlers, in my opinion, not just slalom paddlers or just kayak paddlers, fall somewhere between 2 camps, the "arm paddlers" and the "back paddlers." Both types have been successful in slalom, so I guess it is wrong to say that one type is good and the other bad. But for what it's worth, I believe that the back paddlers are more efficient and that is one major reason I have concentrated heavily on their technique in this chapter.

Richard Fox is a back paddler. Back paddlers tend to use the large muscles of the back and trunk to pull the paddle through the water. Arm paddlers, on the other hand, use the arms. The major characteristic of the arm paddler is that he/she bends the arms a great deal at the catch part of the forward stroke while the back paddler holds the arms fairly straight. Back paddlers have torso rotation during the forward stroke, while arm paddlers often have none at all.

Arm paddlers tend to be tall, thin people, like Liz Sharman and Lubos Hilgert, although not all such people are arm paddlers (Edi Wolffhardt, Linda Harrison) nor are all arm paddlers tall and thin (Jean Yves Prigent is a bit of an arm paddler).

Arm paddlers tend to use long paddles: Sharman 208 cm. at Bala, Hilgert 210. In fact, it seems to me that the long paddle makes arm paddling necessary: only by bending the arms can one keep the paddle from going too deep into the water. Also, the long paddles tend to be held more vertically than shorter ones, thus adding another distinctive characteristic to arm paddlers.

Arm paddlers tend not to lean their boats on edge as much as back paddlers, nor do they lean their bodies around as much. Perhaps this is because they don't need to: the longer reach they get through the longer paddle (and possibly their longer arms) makes leaning less necessary.

In this chapter I have dealt only with the back-paddling style. That was for various reasons, but largely because of lack of time and

space. Perhaps at another time, an interesting study could be done of the other basic style.

I have come to believe that many K1 slalom strokes are best viewed as stemming from C1 strokes. This is more than just a quaint little observation: it has major implications for how kayakers should attempt to learn kayak strokes. In essence, they should aspire to do with both blades everything a good C1 does with one blade -- intricate feathering, compound reverse strokes, cross draws, everything. I think this is the fastest way to learn the dexterity needed to become an elite kayaker.

Through necessity the C1 paddler has to learn how to do everything with one blade but kayakers do not. If they get into trouble on one side, they can turn to the other blade to see them through. Yet, in my opinion, there are countless times when they could benefit from a judiciously applied canoe stroke to make a quick little correction or facilitate a turn or achieve optimum boat positioning with minimum effort.

Here are some examples of how Richard Fox uses canoe strokes in Kl:

* In upstream gates he very often feathers the entry duffek stroke forward, back, and forward again very quickly to achieve the optimum exit angle, just like an on-side C1 would.

* In setting up for a bow sweep, Fox will feather the blade forward in the water and then quickly convert the feather into a sweep.

* In doing a back-around reverse, Fox sometimes uses a sliding pry (going towards the bow) as a correction stroke to get the boat into proper position.

* In places where he wants to slow down and achieve great precision, Fox keeps one blade in the water in the duffek stroke position, ready to convert quickly into a draw or a sweep. He explains this:

"When the blade is in the water, you have more control. It does slow the boat down, but sometimes you want to slow the boat down and this is the best way to do it."

CROSS DRAW: Where on earth would a K1 need to do a cross draw? Or paddle through upstreams on one blade in reverse? Or ferry in reverse with one blade? He wouldn't. But practicing it is one of the quickest ways to achieve extreme dexterity and balance which is

sometimes necessary in pulling off a tough move requiring normal strokes. It is also a good way to stretch.

FOX'S STYLE: The following are 3 sections which describe some overall characteristics of Richard Fox's style that don't seem to fit in anywhere else, yet seem so important that they should be highlighted.

1. STEERING FROM THE BOW. One characteristic of an elite kayaker (indeed an elite boater in any class) is the ability to steer the boat from the bow, usually through sweeps, but sometimes through duffeks or "bow rudders" as the British call them. To be able to sweep the bow around when preparing for a tricky turn, one has to be leaning pretty far forward. This is simply because the farther the bow sweep occurs, the more effect it has. Thus, when Fox approaches many turning moves, he starts to lean quite far forward. For reverse gates, this facilitates a strong sweep stroke. For many upstreams, it allows him to reach way far forward on the duffek which has the dual effect of placing the duffek up towards the bow where it can turn the boat easier, and pushes the bow down so the eddy can grab it sooner and pull it up through the gate. But the kayaker should not lean so far forward all the time, because it restricts torso involvement in the forward stroke as well as impairs breathing.

2. CHANGING STROKE RATES. After a turning move -- an upstream or a reverse -- elite kayakers like Fox pick up the stroke rate for several strokes. As Fox approaches the next turn, he slows down again, in order to achieve precision. When he "changes gears," though, there is a smooth transition. He accelerates and decelerates in phases, not abruptly. This is crucial for maintaining the glide of the boat.

3. SHOOTING OUT OF TURNS. Fox pays special attention to quickly accelerating the boat after turns - - reverses and upstreams. On reverses, as soon as the boat starts to clear the gate line, Fox often does a sharp sweep. Visually, it appears as though he uses a high stroke rate (but still very smooth) between the gates, but then takes special care to get the boat in exactly the right position for the reverse gate and particularly to set himself up for the exit from the reverse gate. There is a slowing of motion right around the gate. But then, as he starts to clear the gate, he really nails the initial stroke out of the turn and starts to accelerate again. On upstream gates, it is similar: He builds up a lot of speed coming into the turn, glides into the gate on a duffek stroke while riding off the momentum he has already built up, and then really hits the exit sweep on the way out of the gate to reaccelerate the boat.

## How to Practice Technique

The following are the ideas of Ken Langford, Fox's coach, about the best method for practicing technique:

1. Sort out a course.

2. Set two or three boaters round the course and observe only the route the crash hat (helmet) takes, noting where it stops or slows down.

3. Watch the boat on the second run at those places where the crash hat slowed down and analyze the different boat directions, speed, rotation, lean and so on.

4. Decide which is the best position for the boat on the various moves.

5. Select paddle strokes which will achieve the required boat position.

6. Throughout all this, a stopwatch will be useful to analyze which is faster. Discussion will determine which felt more comfortable. Repetition will determine which is safer.

Ken has often said that "all slalom training is remedial." This implies that there is no right or wrong way to do a stroke. The important thing is to determine where the individual is losing time by comparison with his rival -- hence, studying the crash hat route. Then look at the boat differences on the places where time is lost and thirdly, sort out the strokes.

## Warm-ups

Richard Fox usually takes a rather long warm-up. He begins with general stretching before he even changes into paddling clothes. He stretches his hamstrings in the same manner as a runner would; to stretch his shoulder muscles, he stands in a doorway with his arms out to the sides gripping the side of the doorway and leans over the threshold; and so on.

Then, once in the boat and starting off for the top of the course, he warms up further through "stroke mobility":

* Paddling forward slowly and weaving the boat back and forth with sweeps on alternate sides; or duffek,

feather, sweep on one side followed by duffek, feather, sweep on the other side.

* Reverse paddling. He uses very exaggerated backstrokes in which he reaches way around with the blade almost touching the stern. Very slow, even stroking.

* Holding the boat up on edge and paddling with one blade, like a Cl. First he leans to his on-side and then to his off-side, paddling all the while.

* Paddling around and around in little circles with one blade, never taking the blade out of the water. First he does it on one side for a while, then the other, and finally, with the cross draw, on both sides.

* Running short little gate courses all on the cross draw.

"A great deal of my training is endurance based, so it's developed as a habit that I paddle smoothly. If you're always jabbing your blade in, you're probably faster off the start, but not over a full length course."

Richard Fox

Richard Fox has a very distinctive forward stroke. For some reason, it reminds me of a swimmer's stroke: "long and low." Interestingly, Richard does a fair amount of swimming as part of his training. The following are his major characteristics.

1. He sits up straight in the boat. I think a large reason for this is the very tight backstrap which pushes his pelvis forward.

2. However, he doesn't actually lean forward very much of the time. Richard said he used to do this, but stopped because it "interfered with proper trunk rotation."

   The one time I did see him lean forward while doing the forward stroke was when ferrying cross current on the top of the Feeder Canal, our training course in Washington, D.C. He windmilled across and his chest came quite close to the deck. He has very loose hamstrings to permit this.

3. Richard holds the paddle more horizontally than most people; also his elbows are very low. He says "this is good for steering." It is easier to do sweeps from this position.

When Richard pushes out with the top hand, it goes no higher than eye height, as is shown in the photograph below:


Low elbows characterize Fox's forward stroke. (Photo courtesy of Richard Fox)

4. His lower hand extends quite far out for the catch, and comes quite far back on the pull through, but not excessively far back.

5. The lower arm is pretty straight on the pull through.

6. There is a good deal of trunk rotation, but his head stays straight ahead.

7. Richard inserts the blade almost gently in the water and a split second later the power comes on. I think this is what gives him his smooth style. It reminds me of what Alain Feuillette, C2 wildwater champ, said to me ten years ago. He got the blade fully seated in the water before he pulled back, so he wouldn't "take the tops off the waves," i.e. miss water and splash. There is no splash on Fox's stroke.

8. The boat glides like a wildwater boat. There is no side slipping. When we did flatwater sprints once,

however, Fox's boat yawed from side to side more than anyone else's. I think this must have been due to his horizontal paddling style and to the fact that he was paddling flat out. On gates, I don't believe he ever goes flat out and hence, there is no yawing.

9. Richard's stroke rate is 104 for a 2 l/2 minute sprint. He often doesn't appear to have a very high stroke rate but on a very short sprint he can achieve a higher rate than most people I've seen. He can really get it up there, but he still retains a high degree of smoothness. I think the light fiberglass blades help with this acceleration.

10. The boat is dead flat on the forward stroke, i.e. it doesn't rock from side to side.

Fox's philosophy about forward stroking and speed in a straight line is somewhat unusual. Basically, he doesn't think straight ahead speed is all that critical:

> It's rare that you are going straight ahead in slalom, so it doesn't follow that the speed of a canoe in a straight line translates into speed over a slalom course. In slalom, you're often going cross-current, or with the boat up on edge, or steering.

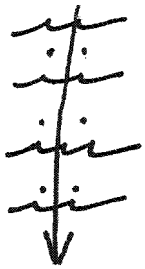
Thus, Richard's maximum speed isn't all that great and people can beat him over, for example, a one-shot 100 meters. However, he really comes into his own when the paddling is more of an endurance nature. Richard has extremely high endurance. Almost all of his long distance paddling is done in the slalom boat, too, not the downriver boat. "It's more specific," he says.

A high stroke rate is best here. Lean forward somewhat to keep the bow down and thus make the water line longer. But be careful not to overdo the lean and thus restrict breathing, pumping with the legs and torso rotation. Above all, be sure to reach forward and ensure that the stroke finishes when the lower wrist reaches the body. The problem to be avoided is the lifting of water by strokes done behind the body. This aspect of the forward stroke is described under "Forward Stroke," earlier in this chapter.

Having said this, however, it should be noted that in slalom you go completely straight for very little of the course. Most of the time you have to steer, either by leans or with draw or sweep elements in the forward stroke. Thus, there is often likely to be some deviation from the theoretical "ideal" forward stroke.

Furthermore, since the straight ahead strokes last only a few seconds, accelerating the boat up to speed is often more important than maintaining it at top speed. To accelerate, it is best to cut down on the torso rotation and straight arm pull-through, going so far as to do the pull-through with a bent arm at this stage. However, after a few strokes like this, you should then convert over to the longer stroke, described above.

The trick is to be able to "switch gears" smoothly, i.e. don't just jump the stroke rate up or down abruptly, but phase into higher or lower rates with a few transition strokes done with bent arms and little torso twist.



Forward Gates In Waves

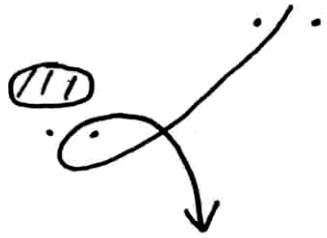
Here the waves make steering more of a problem than it is on relatively flat water, so stroke rate is less important than boat and stroke positioning. If possible, when on waves you should try to:

1. Time your strokes so you are taking a forward stroke when the boat hits a wave. Otherwise the wave will slow you down a lot.

2. Paddle on the downstream side of waves. You shouldn't wait several seconds to set up for this, but often it is possible to achieve it if you just think about it.

3. Cultivate the ability to steer the boat with one blade, by incorporating bow or stern draws and sweeps into smooth, elongated forward strokes. This is preferable to cutting one stroke short in order to do a correction stroke on the other side, which is jerky and slower.

Ideal Upstreams



The following are Richard Fox's major considerations in running all upstream gates, not just ideal ones:

* Get as high in the gate as possible WITHOUT LETTING THE BOAT SLOW DOWN. Always try to keep the boat moving upstream.

* Keep the ends of the boat out of the water as much as possible.

* Get a fast exit.

Applying these principles to all the different types of upstreams results in many different techniques. As Fox puts it,

> You've got to always be aware of the position of the next gate. For example, if it requires a hard cross, then you want a pretty controlled entry to the upstream gate. If it is an "ideal" upstream, you want to get behind the gate more (pocket theory) and cut closer to the inside pole on the way out. You go in wide and come out fast.

APPROACH TO THE IDEAL UPSTREAM

The proper approach path is crucial - - get that cross current drive. A common error is not getting the boat sideways enough in the current upstream of the gate so that the boat can be driving across the current into the eddy.

One key to doing a good upstream gate is converting downstream momentum into cross-current momentum and finally into upstream momentum when actually in the gate. Thus, the more speed the boater has while making the proper turn into the gate the better. For this

reason, the boater should strive at all times to keep up his momentum on the approach path and avoid strokes which slow this down, such as backstrokes and reverse sweeps.

There are four options for achieving the proper approach path. Indeed, sometimes if one or more of these are used, it is possible to convert a less than ideal approach situation into a good enough one that the boater can still do the rest of the upstream sequence as though it were an ideal one. The four options, in order of preference are:

1. Be on the proper approach path already -- no corrective strokes are needed. This allows you to simply paddle hard on the proper path. You have to study the course so well that you know what the proper path is.

2. If you have to correct, use one of the following, incorporated as part of a forward stroke:

    a. Duffek Stroke. On the side closest to the upstream gate, start a forward stroke with a duffek stroke. Sometimes, it is even more effective to slide the duffek stroke forwards quickly, for this turns the boat even faster.

    b. Sweep. On the side farthest from the upstream, start a forward stroke with a sweep.

    c. Stern Draw. On the side farthest from the upstream gate end a forward stroke with a stern draw.

Which one of these options you choose depends on which phase of your stroke cycle you are in. You choose the one which does not interrupt your stroke rate.

The sweep option (b above) can be converted into the stern draw (c) for an even more powerful combination. This is done routinely in C1 and C2 (by the sternman) and can be used in K1 as well. Ken Langford, however, feels that there are many disadvantages in using the stern draw. He maintains:

* The kayak is less buoyant than a C1 and any stroke done behind the body will tend to pull the stern down, which is bad.

* If the paddler's elbow goes behind his body line there is a delay in getting the next stroke on the opposite side while the paddle is brought forward again.

* The effect of the stern draw can be better achieved by

a fast duffek on the upstream side followed by a forward stroke on the inside of the turn.

UPSTREAM ENTRY

On the ideal upstream Fox generally does the following:

* Aims for the pocket -- he calls it "going wide" -- so as to get a good angle in the gate for the exit.

* Watches the outside pole (outside of the turn) and tries to put the bow of the boat just inside the outside pole.

* Does a strong, sharp sweep stroke on the side away from the gate. This is a very important stroke because it hurls the boat into the eddy with a lot of momentum.

* Goes on the duffek farther from the gate than most people, leans way forward with the body, and places the duffek up towards the bow.

* Keeps a fairly closed angle on the duffek stroke so that it slices through the water with a minimum of braking action on the boat.

These procedures enable Fox to achieve a fast, very smooth glide up through the upstream gate.

Leaning forward is important, because it enables the boat to go around a gradual arc through the gate, not stop and pivot around its mid point. When you lean forward, the eddy will grab the boat earlier and help turn it for you. Placing the duffek stroke up toward the bow also speeds the turn, but without having to open the angle of the blade, thus destroying upstream momentum to achieve the turn. Good chines -- that is, a U-shaped cross section on the hull starting about three feet from the bow -- helps a lot with this.

To assure a high turn into an upstream gate, the entry duffek should be converted into a forward stroke so the boater can pull himself up towards the gate line. To do this successfully, the boater must do the entry duffek in an extended position as far forward as he can comfortably reach, so there is enough room to pull back on a decisive forward stroke. If the boater does not extend his arm straight, the forward stroke will be short in the water and thus weak. As a consequence the boater may not get a high turn.

Ken Langford warns, however, that this may be difficult for women to do:

> Doing the entry duffek in an extended position is very strenuous, particularly for the ladies. The critical factor is that AT THE TIME THE PADDLER CONVERTS from the duffek to a forward stroke, the arm should be straight. Consequently, one can often extend the bottom arm gradually while in the duffek position and use the EARLY PART of that stroke to initiate the turn and apply the brakes if necessary. Then, by reaching forward, he is in position to do a good forward stroke.

While leaning forward is important, sometimes in a big, pulsating eddy where there is tremendous current differential, it is impossible to stay forward for very long. In this case, just let the body come back naturally, while still keeping the duffek stroke close to the bow by pulling back with the top hand.

If the boater leans back on the entry and negotiation of the gate, he shifts the balance point of the boat backwards and causes the boat to stall out and pivot a little aft of its mid point, thereby losing all upstream momentum. The telltale sign of this is the bow going way up in the air (because the stern is caught under water for a second). There are indeed times when this has to be done - - usually because of a bad approach situation -- but it should be avoided when possible because it is not the fastest way to do an upstream.

FOX ENTRY MODIFICATIONS

* After the entry sweep, if he sees that the turn into the gate will be too tight if he goes immediately into an entry duffek stroke, Fox goes into the duffek position, but momentarily opens the blade angle and does not fully insert the blade in the water. Then, after a slight pause in this position, he closes the angle and buries the blade at precisely the right time.

* After the entry sweep, if he sees that the turn will not be quite tight enough if he goes immediately into an entry duffek stroke, Fox goes into the duffek position but dips the back face of the paddle into the water a little bit, so there is a slight braking action which tightens the turn. Immediately thereafter, he does a normal duffek stroke.

* Sometimes Fox does a duffek, converts it into a forward stroke and feathers it back into a duffek.

* Sometimes he finds that if he does a complete forward stroke on the side on which he is going to do the entry duffek next, it will throw off the timing of the duffek, so he takes a very short forward stroke with a flip of his wrist, and then goes back for a duffek stroke.

UPSTREAM EXIT

After he has achieved a severe angle in the upstream gate, Richard Fox does the following:

* Starts a sweep on the upstream side BEFORE HIS BODY REACHES THE GATE LINE. He does not start the sweep very far in front of him. He looks over the DOWNSTREAM SHOULDER, not the upstream one, on the sweep.

* Thrusts his shoulder through the gate.

* Makes a lightening-quick transfer from the exit sweep to a duffek on the downstream side.

* Sometimes he quickly feathers this duffek forward in order to turn the boat around a little more.

This method is a bit risky - - you might hit the upstream gate on the way out - - but it is the fastest way, even on flatwater. An important factor, however, is to be able to exert a powerful duffek/forward stroke from the awkward starting position of lunging through the upstream gate with the shoulder. Many people simply hang

on the duffek too long, almost resting.

The quick transfer from exit sweep to downstream duffek is made possible by looking straight ahead or even a bit downstream on the sweep, and not allowing the head to follow the sweep back, thus looking upstream. Because his head is looking somewhat downstream, Fox has less weight to shift from the upstream side to the downstream side.

MISTAKES

* Failing to achieve the proper approach path and thus coming down too straight on the upstream. This causes the boater to stop the boat, and try to pivot on the mid point rather than gliding around a more gradual arc, up and out of the gate.

* Failing to employ a sweep on the side farthest from the upstream to start the boat heading for the gate before you insert the duffek.

* Leaning way back in an effort to make the boat turn around into the gate faster. This may be the only way of salvaging position from a bad approach, but it isn't the fastest way to do the ideal upstream because the boat stops dead in the water while it spins around. Leaning back also makes it more likely that the bow will hit the gate.

* Being slow to transfer from the upstream side sweep on the exit to the downstream duffek. Getting quickly from the sweep to the duffek is the key to accelerating out of the gate.

* Being slow to start the exit sweep on the upstream side and not leaning through the gate.

* Not really exerting power on the downstream duffek/forward stroke.

## Flatwater Upstream

On flatwater, or easy moving water, there are a number of differences from the ideal upstream. The following is what Richard Fox does when he has a wide approach to an upstream in easy moving water with little or no defined eddy.

* He paddles closer to the gate before inserting the entry duffek stroke. Since there is little eddy to help snap the boat around the turn, the boater has to provide this snap himself. Paddling closer to the gate is part of it.

* When he inserts the duffek, Fox puts it out to the side much more than he does in good whitewater. This causes a braking action on the boat and snaps the turn. Fox is able to get the duffek stroke out to his side sometimes by leaning his body out over the boat. But when he does this, he still keeps the boat itself absolutely level. When the duffek goes into the water, the lower arm is bent quite a lot, the top arm is pulled back so that it is just in front of his forehead, and he is leaning back just a bit to keep the bow up. Since there is no eddy, having the bow down would impede the turn.

* Fox keeps the boat dead level all the way around the turn. He deliberately does not lean it up on edge because without an eddy to help you, a boat on edge "plows" water and this slows the turn. The boat will spin the fastest when it is completely level. In a good eddy, it doesn't matter that the boat is leaned on edge because the eddy water pulls the boat upstream.

* The next step is crucial. As the boat comes around the turn, Fox quickly feathers the duffek blade forward, by extending the lower arm which was bent when the duffek went into the water initially. As soon as his arm is at its fullest extension, he pulls back on a forward stroke, which pulls his body up to the gate line and maintains glide, even though there is no eddy to help out.

* As soon as he finishes pulling on the forward stroke, he does his exit sweep. It is important that the duffek not be kept in the water very long (because no matter how thin the blade, the drag slows forward momentum); and that the feather, pull stroke, and exit sweep are done very quickly -- albeit smoothly --to keep up momentum around the turn.

* On the exit Fox leans forward on the downstream duffek. But since the stern is under the water a bit from when he did the exit sweep, even though he is leaning his body quite far forward, the bow is still up in the air until the stern comes up from underneath the water.

If Fox does not have a wide approach, and must come down on the gate fairly straight-on, he does the following on an easy water upstream:

* Inserts the duffek way out to the side, opposite his thigh bone. He lets it slide back from there so that it winds up opposite his hip. His lower arm is bent a lot. The top arm is bent back to just in front of his forehead.

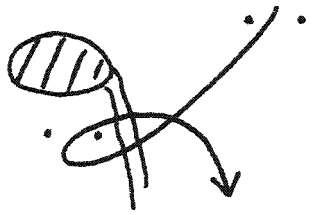
* The angle of the blade is very open, that is, the blade is at about a 90 degree angle to the axis of the boat. This causes a braking action which turns the boat abruptly.

* Fox leans away from the duffek and back slightly to get a small pivot turn.

* But precisely as the bow starts to fall out of the pivot, he closes the angle of the blade, feathers it forward and takes a short forward stroke. As the boat falls out of the pivot, it shoots forward a bit and the forward stroke accelerates this. It is important that the timing is right so that the two happen together. Feathering the blade forward is not as awkward as it sounds at first, because while the blade is initially at 90 degrees to the axis of the boat, as the boat comes around the turn, the blade is only at about 30 degrees to the axis of the boat when the time comes to feather it forward.

* As soon as he finishes the short forward stroke, Fox goes right into his exit sweep.

Entering an Upstream Through a Thick Eddy Wall



If it is possible to get a wide approach to an upstream with a thick eddy wall, the best strategy is to blast across the eddy line and deep into the eddy. Doing this might require that you hit the eddy a bit low on purpose, for this allows you to make a more gradual turn in the eddy and therefore keep up momentum better. Often in this situation, you don't even have to do a real duffek stroke, you just paddle around the turn. If, on the other hand, you try to get a really high turn into the eddy, there is a good chance that you will eddy out on the eddy line and have to fight your way across it, which costs valuable time.

If it is not possible to get a wide approach, for example if the gate before the upstream prevents it, and therefore it is not possible to get up enough speed to really blast across the eddy line, the following strategy is best:

* The angle of entry is key. If the boat is pointed at all downstream when it hits the eddy line, the boat will be deflected away from the eddy and the boater will get a low turn, or possibly even miss the eddy altogether. To avoid this, the bow has to be pointed upstream as much as possible. To do this, do:

    1. A sweep on the downstream side as the last stroke before hitting the eddy wall.

    2. Keep the bow up so that it is not caught in the eddy wall and turned downstream.

    3. After the sweep, do a duffek on the upstream side to turn the bow upstream. Once the bow is pointed at all upstream you are safe because you cannot be swept downstream very far.

    4. Don't lean excessively into the turn or downstream. If you lean into the turn too much, it's easy to catch the upstream edge in the eddy wall water that

is rushing downstream -- remember, you are not in the eddy yet. If you lean too hard downstream it's difficult to get a good duffek on the upstream side a second later because you have to shift your body weight from one side to the other and you don't have time to do it.

If you do the above things, it is not necessary to hit the eddy wall really hard. The position of the boat and the strokes are everything.

### Paddle Up Through An Upstream

* Get over to the shore where the eddy is strongest and paddle up there.

* Charge upstream, paddling really hard. You have to pick the stroke rate way up.

If you do these two things, you might not lose much time compared to getting a high turn.

### Mistakes

* Boater paddles up the eddy line where it's slower.

* Boater doesn't get enough angle for the exit and thus goes higher up out of the gate than is necessary. Going to the shore more helps get the angle.

* Boater doesn't start exit out of the upstream gate quite soon enough -- lunging the shoulder through the gate before his body is on the gate line -- and goes up too high.

* Boater goes up next to the shore, but gets too much angle as he starts for the gate and ferries into a pole.

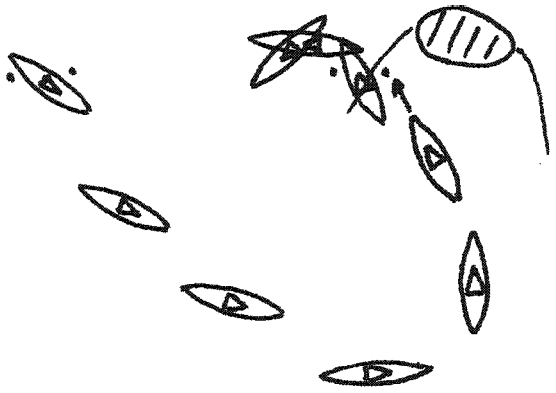
Paddling Back Up To a Gate In the Current

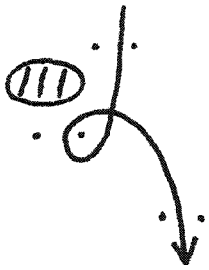
When you have to approach this type of gate from below and from an angle, the key is to aim at the pole nearest you -- not the middle of the gate. Try to put your bow under the near pole, or possibly just to the inside of it, and the boat will ferry into the middle of the gate just as your body breaks the gate line.

Secondly, be sure to keep paddling toward the gate with good strong strokes. If you stop paddling and do a corrective duffek, for example, you will lose all the upstream momentum needed to clear the gate.

Thirdly, make sure you do not lean upstream even slightly, because the current will catch the edge of your boat and push the boat downstream just at the critical moment, thus jeopardizing your chances of moving through the gate without a penalty.

The trick is to be perfectly lined up so that no corrections are needed once you start moving toward the gate.





Bad Approach

In the less than ideal approach to an upstream, Richard Fox makes extensive use of feathering the entry duffek stroke to achieve the desired exit angle in the upstream gate, similar to what an on-side C1 would do.

If on top of a bad approach the poles are low, Fox would invariably use the feather strokes. His procedure:

* Forget the pocket idea entirely. Instead, aim to enter the gate with the bow pointing away from the current and toward the shore.

* Do a strong sweep on the side away from the gate.

* Go on the duffek stroke farther away from the gate than most people, lean way forward with the body and place the duffek up toward the bow.

* Watch the pole outside and put the bow between the poles. Sneaking is not possible and would result in a penalty.

* As much as possible, keep a fairly closed angle on the duffek stroke so that it slices through the water with a minimum of braking action on the boat.

* Feather the duffek forward and back, several times if necessary, to turn the bow from pointing away from the current to pointing at the current. Thin blades facilitate this. Feather in front of you if at all possible.

  In reading this description, some people have erroneously interpreted "feather stroke" to mean simply sliding the blade toward the bow, then at the last second doing a little draw to turn the boat. In actuality, the blade is set at an angle and pushed through the water that way. It doesn't take very much angle to turn the boat, especially if you can get the stroke up toward the bow. But the matter is complicated by the fact that often you

have to continuously change the angle of the blade while feathering it forward.

* Use same exit as for ideal upstream.

Fox uses the feather strokes a lot - - "sometimes I think I do them too much," he said. But he does them so well that he is usually able to keep up the boat's momentum in the gate even though the approach is less than ideal. If you paddled into the pocket here, there would be a pause as the boat was pivoted on its mid-point to turn facing the current in the upstream gate. Fox has no pause.

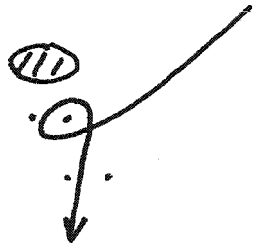
By not pulling excessively on the duffek stroke, allowing the boat to slide sideways into an angled position, and feathering the blade to get exactly the optimum position, Fox has more of a gliding arc, even on less than ideal approaches.

Fox says that his use of the feather strokes stems from watching the C1s and copying them. He says the feather strokes "are not necessarily faster, but they give better control." Another time, he explained, "feathering sets up stroke timing. If you have to stretch to do a two-stroker, feathering will help you do it."

Pushing the blade forward on a feather tightens a turn a little bit. But the boat's turning momentum dies easily so sometimes the blade has to be pushed forward (and pulled back to set up for the next push) a few times.

Sometimes, Fox comes extremely close to the inside pole when he uses the feathering technique. In these cases, it often becomes too difficult to execute the feather strokes way out in front of him so he does them almost beside his body -- and can still turn the boat quickly in the gate to achieve a good exit angle.

Even when Fox is using the feathering technique, he still tries to lean quite far forward. Sometimes this is to sneak the pole inside the turn on his entry. But generally, it is used when the eddy is narrow; by leaning the boat forward, he can carve the turn without using a wide arc.



Tight Turn Following An Upstream

The only difference here is the exit. In this situation, Fox does his exit sweep and jabs the paddle into a duffek very quickly. But even more importantly, he inserts the stroke behind his body, rather than out to the side. Furthermore, he cranes his neck around so he is looking downstream more than most people at this stage.

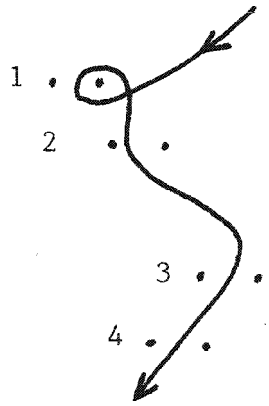
There are two objectives here. First, Fox gets his body into a downstream position and then twists the boat around to catch up. "You can do this with light boats," he explains. But he adds that he uses trunk and back muscles for the move and that they have to be built up over a long time. Fox does not do special weight exercises for this development, just a lot of "breakouts" (upstreams) in practice.

The second objective on these tight turns is to lean the boat slightly upstream so that the stern slices under the water and the bow lifts up, thus "shortening the effective boat length," as Ken Langford puts it, "and allowing a faster turn." "But when done properly, the bow is never higher than 12 inches above the water."

Ken concludes by explaining:

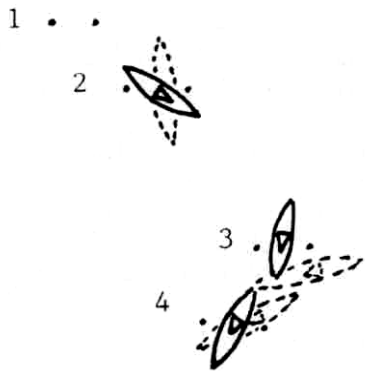
> By the time the boat has turned downstream, the duffek stroke is at the front of the boat (beside the paddler's feet) and can be converted into a forward stroke on the same side.

A variation of this, requiring a somewhat different technique, occurs when you have the following set-up:

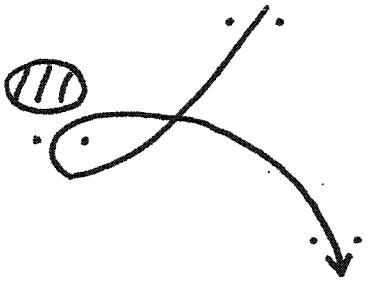


In this case, you want to go through gate 2 with a good deal of angle and at a slower speed than you used in the case described above. Therefore, after exiting the upstream gate you should insert the duffek stroke out to the side rather than behind the body so the boat won't turn around facing downstream so much. Also, you should not leave the upstream gate with a great deal of speed -- you need the extra time to position the boat perfectly.

Invariably gate 2 is followed by an offset going the other way -- gate 3 here. Thus, when you go through gate 2, you should aim to go a little bit "above" gate 3 so as to be turning back on it and thus facilitate the passage to gate 4. As you pass through gate 3 the stern will tend to slip out to the side and you need to hold it in with a duffek/stern draw stroke so that "the bow follows the stern" through the two gates.



Upstream Followed By Gate on Other Side of River



Fox executes this in the following way:

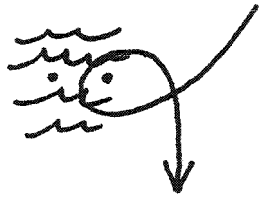
* EXIT SWEEP. Fox does not start the exit sweep very far in front of him, but he does carry it way behind him, letting the paddle shaft come almost parallel with the axis of the boat. Furthermore, the sweep speeds up the further behind him it gets. He inserts the blade smoothly and without any jerkiness, but then applies great force in an accelerating manner, with the most power seeming to come on when the blade is way behind him. Once again, Fox is looking downstream during the sweep, not upstream.

  Ken Langford explains that the key objective here is to "keep the top arm as straight as possible or else the next stroke on the opposite side is delayed."

* TRANSFER TO THE DOWNSTREAM SIDE. After the sweep, Fox does a very quick transfer to the downstream side, but instead of a duffek, he does a strong, sharp forward stroke. After the strong sweep and forward stroke, the boat is leaping cross-current.

* ACCELERATES STROKE RATE. After the strong forward stroke, Fox picks up the stroke rate dramatically. But he phases into the higher stroke rate, he doesn't do it abruptly. Thus he may get in only 3-4 strokes at the maximum rate before he decelerates gradually approaching the next gate, but the whole sequence is very smooth. Visually, the image is of the boat shooting out of the upstream gate and rocketing cross-current and downstream for the next one.

Current Coming Through Upstream Gate



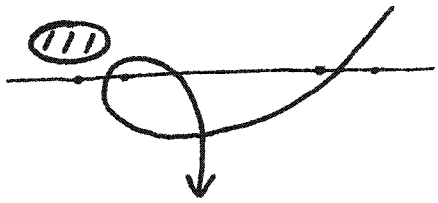
The optimum way to do upstreams in the current is just as though they were normal upstreams, that is, do a sweep just before you enter the gate, a duffek/forward stroke to turn the boat in the gate and pull it upstream, a sweep on the upstream side for the exit, and a downstream duffek after you are out. If the current is quite strong you may want to undercut the inside pole on the entry.

If however, you cannot do the gate with the normal technique, the best way is to use 6 strokes if the poles are low. If the poles are high you are probably better off ferrying into the gate. But if the poles are minimum height, it's best to turn into the gate as though it were a regular upstream -- but forget the pocket idea.

Do a:

1. Sweep
2. Duffek/forward stroke to enter the gate
3. Forward stroke on the other side
4. Draw/forward stroke on the first side
5. Sweep on upstream side
6. Duffek on the downstream side.

Gate Before Upstream On Same Wire



There are three important things to remember on this move:

* Slow the boat down as you approach the downstream gate.

* Go through the downstream gate with an extreme angle.

* Transfer exceedingly quickly from an upstream duffek stroke to achieve the extreme angle in the downstream gate, to a sweep on the downstream side, back to a draw/forward stroke on the upstream side to get over to the upstream gate.

Fox does this move in the following way. As he approaches the downstream gate, he slows down his stroke rate. To slow the boat down even more -- and to get a good angle on the gate -- he inserts an upstream duffek stroke way in front of him. As he passes through the downstream gate at an extreme angle he is forced to let his lower hand come closer and closer to his body so it won't hit the gate. As he passes through the gate, the paddle is completely vertical and his arms are cramped close to his chest. From this position, however, he switches over extremely quickly to a sweep on the downstream side. But the sweep is rather short (even though it is strong) because immediately after it, he switches back to a draw/forward stroke on the upstream side to get over to the upstream gate.

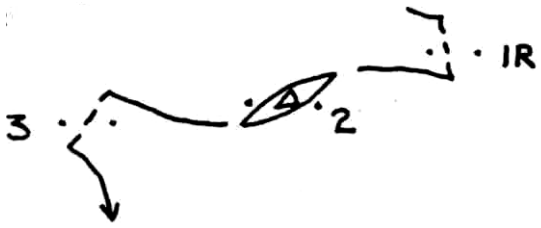
If the downstream gate is laterally upstream of the upstream gate you may omit the upstream duffek stroke to turn the boat while passing through the downstream gate.

In some cases, however, it is best not to even try for a high turn into the upstream gate. Instead it is better to purposefully hit the eddy low and charge back upstream. This can be faster than spinning the boat bow upstream and slowly ferrying over to the upstream gate, stalling on the eddy line while you try to punch across it (if the eddy line is big).

The key thing to look for is whether you can get a good, smooth turn into the eddy by hitting it low. Often you can do this without even having to use a duffek stroke to enter the eddy: you just paddle around the turn. Being able to do this allows you to keep up

tremendous momentum and even if you hit the eddy low, you can fly back up to the gate in a flash, as Peter Fauster did several times in the Jonquiere World Championships.

A variant of the "gate before on the same wire" move is the following sequence:




Here, because of the position of gate 1R -- laterally close to gate 2, the boater is obliged to do a downstream duffek to turn into gate 2. From here, most people try simply to take the paddle out of the water on the downstream side and do a duffek stroke on the upstream side. Actually, it's best to do a sweep/stern draw on the downstream side first, as follows:

* With the lower arm bent, do a duffek stroke on the downstream side to turn the boat into gate 2, and let the blade feather through the water for a moment to get a good angle on the gate.

* As the lower hand nears the pole of gate 2, quickly, but smoothly, feather the blade forward and do a strong, sharp sweep stroke which culminates in a stern draw on the downstream side. This starts the boat turning upstream.

* Then quickly transfer from the sweep/stern draw stroke on the downstream side to a duffek stroke on the upstream side, twisting the body upstream. Once the duffek is in the water, try to push it forward, while torquing the boat around with waist muscles.

* On the approach to a Merano upstream, make sure to take your body sufficiently past the gate before COMPLETING spinning the boat around upstream. You don't want to be too high on the turn and hit the gate as you move towards it. Ideally, you should achieve a turn which permits you to sneak only a few inches of the bow under the outside pole (unless, of course, the pole is very high, in which case you want to sneak everything under it).

  However, if possible, it is best that your approach be cross-current, from the side (as opposed to bow pointing downstream) and that the turn be STARTED well above the gate. Complete the turn only after the body passes the gate line sufficiently.

correct incorrect

If you approach with the bow pointed downstream, you'll go too far past the gate and have to paddle

back up for it. Also, you may be tempted to turn the boat around with a duffek stroke instead of a reverse sweep and the duffek stroke will take you even further away from the gate. This is unlike the C-1, which tries to come straight down on the Merano. The C-1 can get a good pivot turn out of this position, while the kayak can't.

* At the right moment, do a strong reverse sweep to turn the boat, sneaking as much of the stern under the outside pole as is feasible.

* Immediately after the reverse sweep, do a draw/forward stroke with the same blade. This will put you in the gate better and start you up and out of it.

* Exit the gate on a duffek on the downstream side -- after leaning the shoulder through the gate first -- or on a reverse sweep, depending on where the next gate is.

## Mistakes

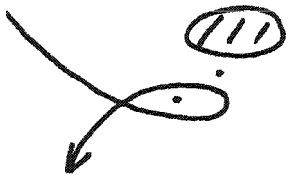
* Boater's approach is too much bow downstream and he goes way past the gate.

* Boater uses a duffek stroke to turn the boat instead of a reverse sweep and the duffek stroke takes him into the eddy, away from the gate.

* Boater spins too early while approaching the gate, winds up with body right beside the gate and hits it.

* After the spin approaching the gate the boater fails do a draw/forward stroke and the boat is not lined up properly for the exit, so the boater wastes several strokes paddling up and out of it.

* Boater doesn't properly consider the effects of the current coming through the gate, is ferried out of the gate too soon and hits a pole.

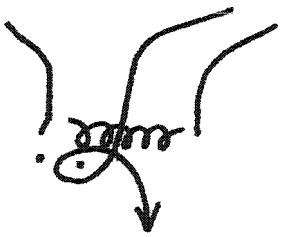


Angled Upstream

Fox believes that most people have a tendency to come in too high under the inside pole, which does not get them far enough into the eddy.

Ken Langford expresses the same thing another way:

> "The other mistakes are (1) not driving far enough into the slack water on the sweep and (2) putting the duffek stroke in too early."

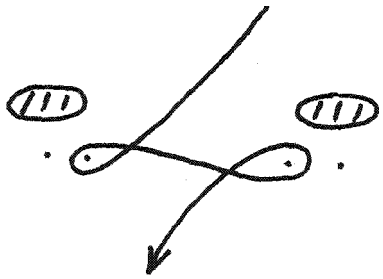


Upstream After Drop

If the approach is bad and you have to forego the ideal cross-current drive and come down straight on the gate instead, have the boat spinning as it goes down the drop so that as it hits the bottom of the drop the boat is sideways. This will permit you to turn right into the gate.

## Mistakes

* Boater fails to start the boat spinning as he goes down the drop, trying instead for a normal, carving eddy turn. As a result, he goes way past the gate and gets a low turn.



The key element in doing most double upstreams properly is obtaining a fast ferry between the gates. Most people don't appreciate how much time can be made up on a fast ferry. The secret is going across at a flat angle, even at the risk of coming in a bit low on the other side. Most people tend to keep the bow pointed upstream too long which they do because it gives better control to the ferry. They feel that because they have ferried across and slid under the poles on the other side, they must be fast. What they don't realize is that paddling against the current with the bow pointed up is slow. Ideally, the boater should build up such fine control that he can come out of a fast ferry and make necessary adjustments to get a high turn on the other side.

Here are the ingredients of a fast ferry on a double upstream:

* Go across at a flat ferry angle:

wrong

right

* Pick the stroke rate way up. When Fox does this, he really windmills across. The high rate is to get the boat across quickly before the current sweeps it downstream too much.

* In fairly easy water, Fox leans quite far forward so that he can control the bow. In heavy water, he sits upright.

* Allow the eddy on the other side to grab the bow at the earliest possible moment. Leaning forward helps this.

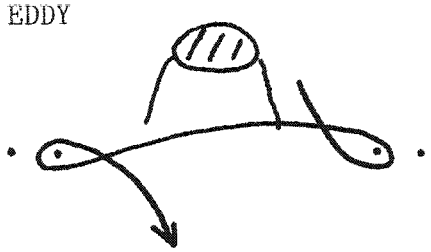
* Stick the entry duffek stroke as far forward as possible, to start the boat turning as early as

possible.

* Enter the second gate with the bow pointed at the shore -- forget the notion of hitting the pocket. Fox really rams the bow into the gate and then turns the boat to face the current with feather strokes.

* Stick the bow between the poles; don't try to sneak the outside pole (unless it is quite high). Fox almost always puts the bow between the poles, so there is nearly no chance of hitting the outside pole.

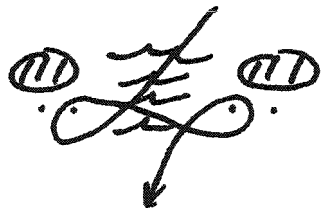
FERRY PUNCTUATED BY AN EDDY



For a fast ferry in this situation, be sure to factor in the effect the eddy will have on your ferry. It will cause the boat to snap around upstream, thus changing your ferry angle and causing you to do the second half of the ferry a little too high for optimum results.

To avoid this, start the ferry out lower than you would normally without the eddy present. Hitting the eddy will correct the angle and send you into the next part of the ferry with the proper angle.

DOUBLE UPSTREAM SEPARATED BY A LARGE WAVE



Up until now, we have been discussing a double upstream with either just fast moving water or small waves between the gates. If you have large waves between the gates, the ferry technique has to be different.

Normally, if you ferry a big wave, you lay on it, going over with little upstream angle. But if you try that with an upstream gate just on the other side of the wave, there is a good chance you will hit the gate (as with gates 22-23 at Bala).

There are 3 possible strategies in this situation:

1. Plan to go into the second eddy low and paddle back up hard. This is the "chicken route", safe, but slower.

2. Go way up into the trough of the wave so that your bow is just nicking the downstream face of the next wave up. When you ferry over this way, the bow will be tilted forward as the boat comes off the wave on the other side, and you will sneak the inside pole on the way into the gate.

3. Do a normal ferry, laying on the wave and going over with a flat ferry angle. But just before the boat gets to the other side, do a reverse sweep on the

> upstream side to yank the bow upstream. With the bow now pointed upstream, you will slide in under the inside pole.

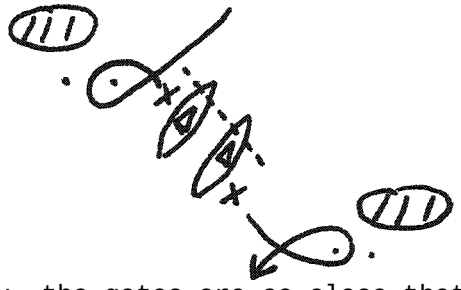
## DOUBLE UPSTREAMS NOT ON THE SAME WIRE

So far, we have been talking about two upstream gates which are either on the same wire or very close to it. Now we look at the situation where the gates are not on the same wire but still within 40-50 feet of each other.

Here, the objective is a smooth gliding path between the two gates with a minimum number of long, smooth strokes.

The usual problem is that the boater leaves the first upstream with the boat pointed too much upstream. Thus, he is likely to go up too high out of the gate, and paddle too long against the current which is slow. Ken Langford talks about this problem:

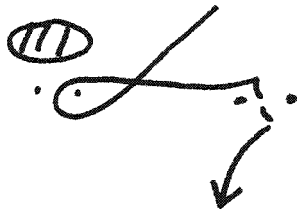
> A common mistake is having the boat broadside to the desired route and thus losing time:



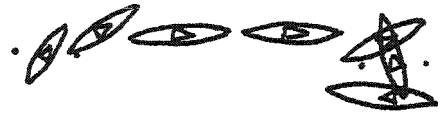
> Occasionally, the gates are so close that such a tactic is necessary. However if you are doing a camel ferry glide (ferrying with the bow pointed upstream) while someone else is paddling straight at the gate, you are losing time.

Once again, the boater should try to have a flatter ferry angle, so that he can actually paddle across the river at the next gate, rather than ferrying over and sliding under the inside pole.

## Upstream to a Reverse, Requiring a Ferry



* After entering the upstream on a duffek stroke, achieve the proper ferry angle by feathering the duffek. The proper ferry angle changes from pointing upstream as the boat exits the gate, to a flatter angle as the boat goes across the current, as depicted below.



* After achieving the proper ferry angle, the next stroke, a sweep/forward stroke on the upstream side, is critical. It should be long and strong enough to accelerate the boat out of the gate and start it shooting across the current.

* After the sweep/forward stroke, the boater should pick up the stroke rate significantly and "windmill" across the current as fast as possible, while leaning hard downstream.

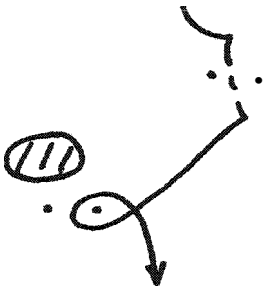
* The reverse gate is executed just like the "full spin reverse" explained elsewhere in this book.

## Do You Ferry a Slanted Wave?

It depends where it goes and where it stops.

In the situation depicted above, the boater is tempted to ferry the wave over to the reverse gate. But the wave is slanted, runs below the gate, and stops before it. Ferrying this wave will probably cause him to miss the gate or hit it. It's best to go up higher and forget ferrying the wave.

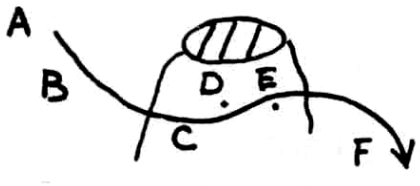
Upstream After a Reverse Gate



When is it faster to back down, as opposed to doing a full turn? Richard Fox feels that the only time it is better to back down to the upstream is if the gates are "close together and on top of each other". On fairly flat water, the quickest way to do this is to draw the bow under the inside pole and then do a sweep/forward stroke with the same blade for the exit. This is faster than sweeping the bow under the inside pole and then doing a sweep on the other side for the exit.

But that was flatwater and/or situations which do not occur in major races. In most situations, you want to turn out of the reverse gate and paddle forwards as long as you can, so backing down is slow. Also, if there are holes, rocks or other obstacles in the way, you want to see where you are going, so you need to be paddling forward. But Fox feels the primary factor is the drive into the eddy that is facilitated by a full turn out of the reverse gate and paddling forward towards the upstream gate. "The drive punching into the gate makes for a smoother turn."

S-Turn




The key to doing a fast S-turn is the ability to go through the gate at an extreme angle and the ability to feather the entry duffek stroke through the upstream gate. The following are the necessary steps:

* From A to B, do a sweep on the downstream side.

* From B to C, do an upstream duffek stroke, being sure to turn the boat quite close to the inside pole -- don't subconsciously treat this like an ideal upstream in which you try to "pocket" the gate.

* From C to D, feather the duffek through the gate. It is important to keep the blade out in front of you when you do this -- don't let it come back to your hip in an attempt to avoid the pole. It's actually safer -- and certainly less awkward -- if you can keep the duffek in front of you while going through the gate on the feather.

* From D to E, do a short sweep on the upstream side ending in a bit of stern draw. This sets the boat up for the next stroke, thus providing for a smoother transition.

* At F, quickly transfer over to a duffek on the right. The moves from D to F are similar to those in "Tight Turn Following an Upstream."

Variants

If you are on fairly flat water and the poles are low and you are trying for a tight turn out of the gate on a duffek stroke, be very careful because it is easy for the stern to pop up under the pole and hit it. This is because when doing the duffek stroke, you tend to lean your body forward, which raises the stern. Because of this

problem, the safest way (but probably a bit slower than the duffek) is to go out on a reverse sweep (see "Leaving an Upstream on a Reverse Sweep"). In some extreme cases, it may be better simply to do a full upstream turn.

Approaching an S-turn without any cross-current drive -- say, because you have to go through a narrow channel on the way to the gate -- requires that you do a pivot turn to get into the gate. To do this, you want to:

* Paddle past the gate a bit so that when the bow comes around it cannot hit the gate.

* Do a reverse sweep in place of an entry duffek, and lean away from the reverse sweep to get a pivot turn.

* As the boat starts to fall out of the pivot, quickly let go of the reverse sweep, feather the blade forward, and do a forward stroke to drive the boat up through the gate.

* If you are really good, you may be able to end the forward stroke with a bit of a stern draw to turn the boat downstream for the exit. Immediately go into a downstream duffek, lunging the shoulder through the gate.

* If it takes several strokes to get up through the gate, however, you probably will want to exit on a reverse sweep.

In planning your strategy for this particular type of S-turn, be sure to investigate the possibility of simply taking the broken line approach, indicated below. This may well turn out to be faster (and certainly safer when you are tired), simply because you can paddle really hard on that path and get a smooth turn into the gate.

Leaving an Upstream On Reverse Sweep

Richard Fox says there are 2 different instances where this is used, and that the technique is different for each.

* As a "salvage operation" on S-turn gates when you've gotten too close to the pole as you set up for the exit. In this case, you come into the S-turn gate on an upstream duffek, take a forward stroke on the downstream side. Then, if your shoulder is too close to the pole, you let the forward stroke come back to your hip, lean away from the pole (while watching it) and do a short reverse sweep. The boat will whiz around. This move is depicted in the following photo of Fox on gate 5 at Bala.


Richard Fox leaves gate 5 at the Bala Worlds on a reverse sweep. Photo by Stuart Fisher of "Canoeist" (incorporating "White Water Magazine")

The trick to getting the whiz action of the boat on the turn is to not try to turn too tight around the pole on the exit.

Instead, let the boat go broadside into the current a little bit so that when you lean upstream to catch the stern, the current will be there to shoot the boat out of the turn.

The second instance:

* To speed up the exit from a regular upstream, usually when the gate is in a wide, flat eddy and there is no current to catch the bow on the exit and pull the boat downstream. In this case you do a normal upstream but on the exit, after you do the sweep on the upstream side, one of the following happens, depending how high you are in the gate:

    a. If you are low, you take a forward stroke, converting it into a reverse sweep as you get up high enough. "Quite often the inside of the elbow joint will go right underneath the pole" in this case.

    b. If you are already high enough in the gate, go right into the reverse sweep, without the forward stroke phase first.

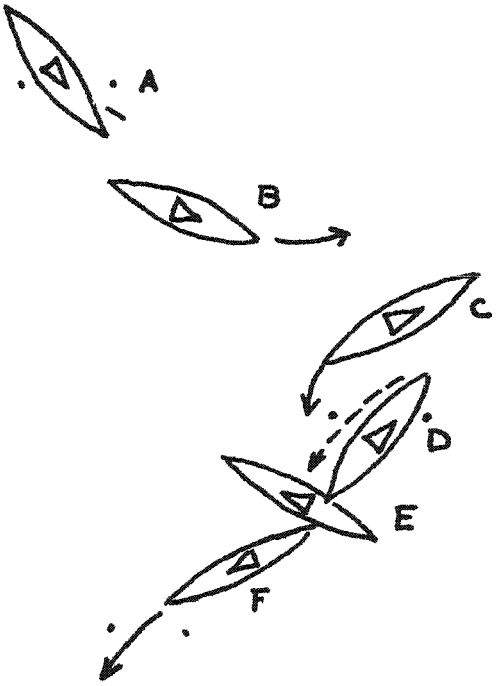
In either of these cases, after doing the reverse sweep phase, you feather the blade used for the reverse sweep forward into a duffek stroke, which is itself then converted into a forward stroke. Hence, this part has 4 phases: reverse sweep; feather; duffek stroke; forward stroke.

Full Spin Reverse

Do the whole move very smoothly, with uniform speed of rotation during the turn.

* This means that if the poles are low, don't try to sneak too much of the stern coming into the reverse gate, or too much of the bow coming out of it. It's better to turn earlier above the gate and drop lower below it. Excessive sneaking is jerky, destroys smoothness, and is therefore slower.

* If the poles are high, however, you can turn tightly around the poles, both entering and exiting the gate without sacrificing smoothness since you do not have to rock the boat fore and aft to get it under the poles.



While going from A to C, try to avoid doing an upstream duffek stroke on the way, if possible. Often you will have to use it but it is faster if you can simply paddle over to C. By the same token, you will probably want to do a sweep at B to start the boat turning, and it may be that you'll just have to do this. But the faster way is simply to paddle over to C and time your strokes right so that you can do a very strong reverse sweep at the end of a forward stroke at C. You have to make sure to come in from the side to accomplish this.

It is important to do a STRONG reverse sweep at C because besides thrusting the stern into the gate, it also sends the boat into a spin even before your body clears the gate line.

At D, feather the blade used for the reverse sweep back toward the stern (dotted line at D) and under the pole if need be. This will make it easy to avoid the pole and it helps achieve the proper paddle shaft angle for a powerful sweep on the upstream side later. This is contrasted with trying to dodge the poles by taking the blade out of the water which is awkward and puts you in a bad position to do a good sweep.

Also at D, start to lean the body forward, both to facilitate a little sneak with the bow, and to set you up for a powerful sweep on the upstream side. At E, start a long arcing sweep stroke on the upstream side to turn the boat for the next gate. This stroke should be carried way back towards the stern while leaning back to shift the pivot point of the boat sternwards so you can do a pivot turn. Only one big stroke should be required for this sweep. If any more turning is needed, commence the next stroke at F with a draw element before executing a normal forward stroke on the way to the next gate. Hopefully, however once you've done the big sweep you can simply start paddling for the next gate. Try at all costs to avoid using a back sweep on the exit.

On easy water, water that is entirely predictable, Fox accomplishes the foregoing technique in the following way:

* As he approaches the gate, he focuses exclusively and as long as he can on the pole under which the stern will go. Only when his back is towards the pole for a split second, can he no longer focus on that pole. But as soon as the bow comes around he starts looking at it again.

* He times his reverse sweep so that the center of his cockpit slides into the center of the gate while his torso is leaning quite far back towards the pole under which the stern is coming.

* As the boat spins around, and the bow starts coming underneath the pole, Fox leans the leading edge down so that it cannot possibly hit the pole. He sneaks the pole at the forward edge of the cockpit.

* When the pole is directly over the bow, however, the boat is dead level. Then, when the bow starts to exit the gate, Fox leans the leading edge up so it will help the bow plane up in the air as he does a very vigorous exit sweep out of the gate.

## Mistakes

* Failure to get a strong reverse sweep at C and not sending the boat into enough of a spin.

* Failing to turn early enough and have the boat sideways enough as it approaches the reverse gate. This results in:

* Doing a duffek stroke at B and/or even C to turn the boat quickly. This stops the boat's downstream momentum and holds it up in the reverse gate too long,

* Getting such a weak sweep at E that you have to do a reverse sweep right afterwards. This also slows the boat's downstream momentum.

## Variants

* Flatwater

This technique works well on flatwater, too, but there is one additional step. After doing the reverse sweep at C, you have to carry it forward a couple of feet more towards the bow, even leaning your body towards the bow to do it. This will ensure that you clear the gate line before turning around downstream. If you don't do this extra step, you'll either turn around before clearing the gate line because there is no current to pull you through the gate (a 50 second penalty) or if you do get through, you'll smack the gate if you try to do an immediate sweep because you'll be too close to the gate.

* Large Lateral Distance between the Reverse Gate and the Next Downstream Gate

In this case, instead of feathering the blade through the water at D in the above diagram, start a feather, but then convert it into a forward stroke to stop the boat from turning around too much, and to send it across the current to get to the next gate.

## "Siggi Reverse"

For want of a better name, this move is named after Siegbert Horn, the great K-1 master of the 1970s who used it frequently.

On a full spin reverse, when there is a great deal of distance between the reverse gate and the next one, instead of doing the normal full spin reverse as described above, do the following:

* Approach the reverse gate the same way as for the normal full spin reverse except with more speed.

* Do a reverse sweep on the upstream side to put the stern in the gate and start the boat turning around for the next gate, again as in the normal full spin reverse, but a little bit earlier.

* Feather the blade used for the reverse sweep from the bow towards the stern, also as in the normal full spin reverse, but further back.

* After the blade has been feathered back past the body, do another reverse sweep on the same side. Follow the reverse sweep forward with your body, both to strengthen the stroke and to keep the bow down so it cannot hit the gate.

* Repeat the feather and reverse sweep one more time.

* Do a bow sweep on the other side to complete the turn downstream.

This technique hurls the boat downstream faster than the normal full spin method, but it does not bring the boat around as quickly and thus it is better when there is a great deal of distance between the reverse gate and the next one. Feathering the blade in the water keeps it out of the way of the poles, so it cannot hit them. Leaning forward, especially on the second reverse sweep, makes it possible to sneak the bow under the pole on the way out, thus providing a margin of safety. Sneaking isn't the object here, propelling the boat towards the finish line is, but with the bow down, there is little likelihood of hitting the poles, and you can concentrate more on throwing the boat downstream.

## Full Spins on a Pivot Turn

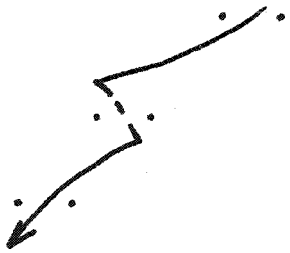
Norbert Sattler has cultivated the ability to do a full spin reverse gate by means of a big upstream draw which pulls the boat all the way around and through the gate. The move works particularly well when the gates are very tight -- almost on the same wire.

In this situation, Norbert does the following:

* A normal sweep to start the boat turning.
* A draw stroke way out to the side and about even with his body (on the right above).
* A lean away from the draw to catch the downstream edge and get a pivot turn.
* Pulls the bow around with the draw and sneaks the pole. "Be careful not to plunge the boat any deeper into the water than is absolutely necessary, because that slows the spin."
* Converts the draw into a forward stroke to accelerate towards the next gate.

Sometimes instead of the upstream draw stroke, Norbert does a reverse sweep. This is better only when the gates are further apart. The draw holds the boat upstream which is perfect for a really tight course. The reverse sweep throws the boat downstream more.

## Slam-Dunk Reverse



There are three ways to do the slam-dunk reverse.

Method I - "Bow rudder reverse" (Assumes good current)

1. Approach from the side, aiming the bow at a point 5 inches outside the nearest pole.

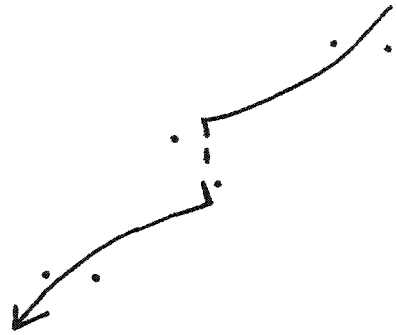
2. Wait until you're quite close to the gate and do a duffek (bow rudder) on the upstream side with the paddle extended way out in front of you and with your body leaning forward. This stroke turns the boat into a slight reverse position.

3. After a slight pause as the boat slides through the gate in reverse, do a sharp bow sweep, also on the upstream side to turn the boat downstream. Be sure to execute it from the extended position, with the blade starting out quite far forwards towards the bow.

4. After the long strong sweep, do a duffek on the other side to complete turning the boat downstream. Don't worry about the boat having to go in a wide arc around this turn, it's still faster (because it is smooth).

This is the method Fox prefers. He does it very quickly with expert timing especially on the bow rudder setting up for the gate, the sweep to start turning downstream and the transfer to the duffek stroke following that. He also comes close to fiftying the reverse gate.

Bow Rudder Reverse on an Angled Gate



This requires a somewhat different technique.

1. Approach as for a normal bow rudder reverse.

2. Draw the boat out of the gate instead of sweeping on the upstream side.

If the gate is angled it is harder to avoid the pole with the bow. Furthermore, the sweep in the bow tends to lift the bow up a bit, thus making it more likely to hit the pole.

Method II "Push-away Reverse"

Fox uses this when it is impossible to approach from the side.

1. Paddle straight up to the gate.

2. Time and blend your strokes so that after your last forward stroke on what will become the upstream side in a second, you turn the boat sideways with a slight reverse sweep, but quickly convert the reverse sweep action into a push-away stroke as your lower hand comes to your hip. This pushes the boat sideways through the gate. On the actual push-away stroke, shove the blade towards the bow.

3. A second later, do a very sharp bow sweep, also on the upstream side, starting with the blade far forwards.

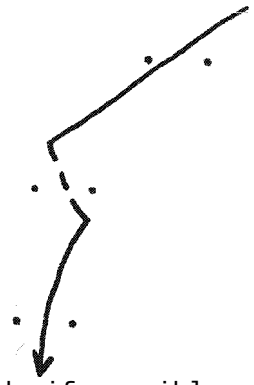
The important thing in Method II is the concept of achieving the proper presentation and then pushing the whole boat sideways through the gate, rather than first pushing the stern through on a reverse sweep on the upstream side and then pushing the bow through with a bow sweep, also on the upstream side. Since the push-away starts at the hip, there is less distance for the blade to travel to get into the bow sweep position thereafter, compared to a normal reverse sweep which starts much closer to the stern. Thus the progression from one stroke to another is much quicker.

Fox explains his thoughts on this:

> "I like to push the boat through sideways whenever possible. You can't always do it, of course, and then you have to do a reverse sweep. When I can, I push the stern just under the pole, BUT NOT UNDER THE WATER. I also try to push the whole boat downstream at the same time."

Method III "Reverse Sweep Exit"

The key factor in determining whether to use this method is whether you need to stop the boat's cross-current momentum either because of the location of the next gate or to avoid getting the bow caught in an eddy.



1. Approach from the side if possible.

2. Do the push-away as in Method II.

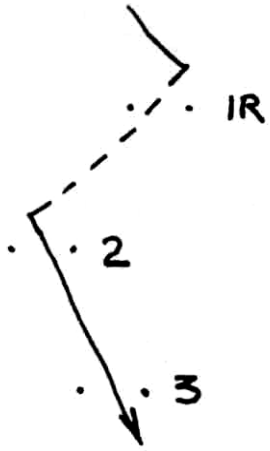
3. Do a reverse sweep on the downstream side to exit the reverse gate. When you do this reverse sweep, push BOTH arms out towards the bow as much as possible and lean way forwards. This helps sneak the gate as well as to set you up for the next stroke.

4. Do a very powerful sweep on the upstream side. After Step 3, you will be in the perfect position for it.

Keeping the arms extended while doing the reverse sweep for the exit is tricky because you normally want to push with one arm and pull back with the other. Nevertheless, it is perfectly easy to do if you practice it.

On each of these methods, it is important that the sweep on the upstream side be very sharp and powerful. "This accelerates the boat out of the turn," Fox explains.

Back Around Reverse




Come over to 1R pretty close to the gate, and using a reverse sweep on the upstream side turn the boat, slice the stern under the first pole (red one here) and start the boat heading towards the green pole of gate 2. All this has to be done with one stroke.

The reverse sweep phase should not commence way behind the paddler's body because this would throw the stern downstream too much. Instead the stroke should start just a little behind the boater's hip and be just enough to get the proper presentation in the reverse gate.

The backstroke phase is crucial. It has to be a strong stroke, pushed hard towards the bow. After this fairly long backstroke, the boater should follow it up with another backstroke on the downstream side, and other backstrokes thereafter depending on the distance, until just before gate 2, he does a sweep on the upstream side to turn the boat into the gate.

It's amazing how far apart laterally two gates can be in very fast moving water and still have this method be the best way. But to make it work on extreme lateral distances the first backstroke has to be perfect -- it has to be very strong and long. Obviously, however, the move is dangerous, because you can't see the next gate well.

Richard Fox has a modification for this move if he hasn't gotten quite far enough over after a backstroke on the downstream side. He does a sliding pry on the upstream side, which he slides towards the bow. Right after the pry is pushed way towards the bow, he converts it into the sweep which turns the boat into the gate.

Mistakes

* The boater allows himself to come on the reverse gate either too fast or in an improper position, so that he

fails to do a good backstroke on the upstream side and is forced to salvage the situation by quickly doing several quick reverse sweeps on the downstream side to turn the stern upstream and sort of ferry in reverse over to the gate.

* The boater misjudges the amount of sliding the boat will do around gate 2, starts his sweep for 2 a little late and slides into a pole.

* The boater uses many short, choppy backstrokes instead of a few longer, stronger ones.

Stern Turn Reverse

The concept here is similar to the back around reverse, but whereas on the back around reverse the boater actually takes some backstrokes, on the stern turn, he does not. He simply turns the boat into the reverse position and it falls naturally into the reverse gate, because that gate is pretty much in line with the one before it.

To turn the boat into reverse presentation, the boater should do the pushaway reverse stroke described previously in the section on slam-dunk reverses, not a regular reverse sweep. The difference between the two is that on the pushaway, the boater does not stick the paddle way back to the stern and out to the side. Instead, he inserts the blade in the water a little in back of his hip at an angle so that it turns the boat into the reverse position when he pushes towards the bow with the stroke. His lower hand should be up towards the bow as the boat passes through the gate. Then, at precisely the right moment, he uses that hand to do a sweep to undercut the pole and turn for the next gate. As soon as is feasible, he should try to get the bow up on the turn.

Double Pump Reverse

Strictly speaking, the term "double pump" is used simply to describe the fact that the boater leaving an upstream gate on the way to a reverse gate turns the bow back to the same shore as the upstream gate before going through the reverse gate. It is done to facilitate the exit for the next gate after the reverse which is also back on the same shore as the upstream.

When there is a great deal of distance between the upstream gate and the reverse gate, the move is similar to a slam-dunk reverse, described previously.

But when the distance between the two gates is small, the critical factor becomes the boater's ability to get a pivot turn and thus spin the boat around fast enough to get into the reverse gate. Most people try to do this by alternating reverse sweeps on the upstream side and forward sweeps on the downstream side. Actually, the bow sweep should be avoided because it pushes the boat away from the finish line. Doing reverse sweeps on the upstream side throws the boat towards the finish line.

In order to do a good double pump, the boater must cultivate the ability to do pivot turns in whitewater. This means having the balance skill to submerge the stern under water and stand the boat up on end, so that it is possible to achieve a quick spin. For most people, the problem is having the confidence to exert a strong reverse sweep while leaning away from it. The only remedy is a lot of practice doing pivots in whitewater, not necessarily in gates.

Here is how Richard Fox does a double pump in good whitewater:

* He peels out of the upstream gate and heads straight for the reverse gate as though it were a downstream gate.

* He does a duffek stroke way out to his side and behind his body, while leaning away from it to catch the edge and get a pivot.

* He lets the boat rotate around the duffek stroke. The blade winds up towards the bow.

* He feathers the duffek blade backwards towards his hip, while leaning his body backwards towards the center of the reverse gate.

* Then, he does a push-away stroke/back stroke starting from his hip to complete the turn and throw the stern through the gate.

* He takes the pole right across his lap, still leaning back with his body.

* As the pole passes across his lap, the push-away/back stroke finishes towards the bow. Thus, it is easy for him to convert it into a bow sweep on the upstream side.

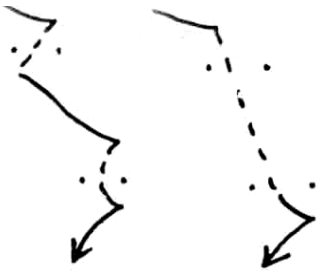
* As soon as his bow starts to come under the pole, he leans forwards both to sneak the pole and get a strong bow sweep. Fox often sets up for this bow sweep a little bit ahead of time, and pauses for an instant with the blade hovering above the water. Then, at just the right moment, he lets go with a powerful bow sweep, while trying to get the bow up in the air to facilitate the spin.

In some cases, it is not possible to get the boat into the reverse position just on one reverse sweep. In this case, the best way to continue getting the boat around is to do a reverse sweep; feather it into a bow draw; and feather that into a second reverse sweep, all as smoothly as possible.

When do you do a double pump, and when do you go out of the upstream and straight back?

Fox says the critical variable here is how steep the waves are when you come out of the upstream gate. The steeper the waves, the harder it is for a K-1 to simply back straight down to the reverse, particularly if the reverse is laterally close to the upstream gate and not very far downstream of it. This is not the case for a C-1 and Fox feels that it is because of the extra width of the C-1. He feels that the thinner K-1 has a harder time staying on the point of a steep wave. Also the C-1's hull is flatter and this helps. Finally the C-1 paddler is up higher, has more leverage and therefore can reach behind himself better.

Thus, with steep waves and a reverse gate fairly close to the upstream gate, Fox will do a double pump; other times he just backs down.



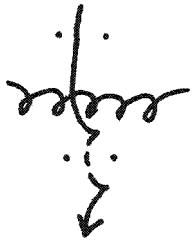
Double Reverse

Is it faster to back straight through them, or to spin around after each?

The gate after the double reverse is really the key factor. If it is way downstream, you can shoot the reverses straight with a lot of speed. But if it is close to the reverses, you don't want a lot of speed, and it is probably better to ferry in between the two reverses.

A different situation, of course, is when the double reverse gates themselves are very far from each other. In that case, you do a slam-dunk on each. How much is "very far"? Probably anything that would require more than about 5 backstrokes if you were to do it in reverse.

A third case is when the double reverses are severely offset. In this case ferrying between them is the only way to make them, particularly when you are tired.



Reverse Gate After a Hole

This can be a very difficult move, especially if the reverse gate is close to the hole and the hole is big. When we discussed the combination, Richard Fox's first reaction was "avoid this at all costs". Here we look at some of the key principles involved. In the first two instances, it is assumed that the reverse gate is quite close to the hole.

* If the hole is not very big, start the turn before hitting the hole and just force completion of the turn as you go through the hole.

* If the hole is very big, turn the boat around in reverse before the hole, but don't quite finish the turn. Just before hitting the hole, do one more reverse sweep to finish turning the boat a split second before it hits the hole. This stroke will lift the stern up over the hole a bit and make the stern turn around easier. The stroke also provides a push through the hole.

In the following cases, we assume that the reverse gate is not so close to the hole and that it may be possible to avoid getting the entire boat into the hole.

* If it is possible to just nick the edge of the hole rather than go completely into it, this is the best strategy. Admittedly going completely into the hole will snap the boat around quickly, but it will also hold you upstream for a moment. Just nicking the hole, on the other hand, turns the boat, but it also allows you to keep up downstream momentum better. If the reverse gate is close to the hole, then you may well want to be held upstream for a moment. But if the gate is not so close to the hole, then keeping up downstream momentum becomes the important concern and avoiding getting the boat completely in the hole is the way to do it.

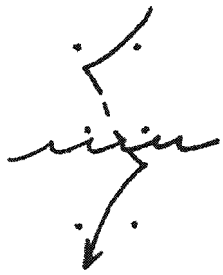
* In cases where the reverse gate is substantially below the hole, the best strategy may be not to use the hole to turn the boat at all, but rather punch

through the hole and turn in the slack water behind it. This helps keep up downstream momentum best of all. Often you will find little waves in the slack water, too, and if you can spin the boat on top of one of them, you will spin around easily. Ken Langford offers this comment:

> I believe in using the water when possible. Therefore the idea of nicking the hole with the bow appeals to me more because there is no need for the paddler to do the turn. The water does it. I accept though, that more CONTROL is possible if the paddler does the turn and this is the only advantage, although it requires slightly more effort.

* If you have to approach the combination from the side, be careful that you don't slide into the reverse gate and hit it. This is particularly a problem if you try to turn at the last second, right in front of the gate. It's better to turn a little sooner (but still avoid getting caught in the hole) so the bow is pointed upstream and you will have a moment to react in the gate and make a correction, if need be.

wrong right



Reverse Gate on a Wave

The question is how soon before the gate do you turn. If the poles are high, there is no problem and you can turn quite late, which gives you a chance to paddle hard up to the gate.

But if the waves are very large you have to turn earlier. Try to start turning the boat on the wave before the one on which the reverse gate is situated. Continue to turn the boat around in the trough in between the two waves. Finish the turn on top of the wave, just before you go through the reverse gate.

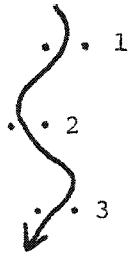
Richard Fox makes this comment about the exit: "if you're really good, you can turn for the next gate while you're still on top of the wave, going through the reverse gate." The key is to set yourself up so the boat is spinning around as it goes through the reverse gate, and reacting quickly so you can do a sweep to accelerate the turn while you are still on the wave.

Easy Offset Gates

If the gates are not severely offset, the fastest way to do them is by paddling forwards and incorporating sweep strokes and stern draws at the beginning and end of the strokes. There is, however, the danger that if the sweeps and stern draws are too strong, they will put the boat into too much of a sideways position between the gates and this is slow. The duffek stroke avoids this problem.

As the gates get more offset, you will have to use a duffek stroke on them. Here, one consideration is hanging on the duffek as short a time as possible because even though the blade in the water is thin it does produce drag on the boat and slows it down.

The following is the proper way to apply the duffek stroke on offsets, taking as an example the following sequence:




* Insert the first duffek stroke in the water a couple of feet upstream of the green pole of gate 1. The lower arm is bent.

* Turn the blade to get an angle on it that will turn the boat.

* Instead of doing a sweep on the downstream side, feather the duffek forward in a C motion, starting next to the boat and bowing slightly outwards. Start the feather upstream of gate 1 and continue it through the gate.

* As the boat passes the green pole, pull in on the top

hand so the top blade cannot hit the gate. Then push the hand back into its original position after the gate.

* As you are pushing the blade forwards, lean forward and down with the right shoulder to "snake" around the pole. Also, pull in the lower elbow, so you can go really close to the green pole without hitting it.

* When the blade is feathered forwards, take a forward stroke on the upstream side.

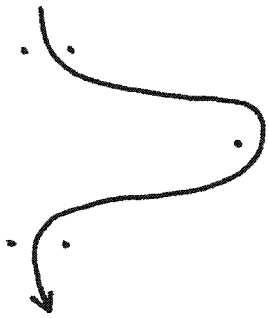
* Paddle over to a position a bit above and to the outside of the next gate, so you can turn back on it before going through it, so you will have some cross-current momentum, in this case, going from right to left as you go through the gate.

* Do the duffek stroke on the left side, as described above.

* Paddle to a point to the outside and above the last offset gate and repeat the whole procedure.

Doing the duffek and forward strokes on the upstream side, as opposed to doing bow sweeps and stern draws on the downstream side, allows the "bow to follow the stern", as Ken Langford puts it. By holding the boat to the inside of the turn, you cut down on the side slipping that is likely to occur with big sweeps and stern draws and which will slow you down.

## Severe Offsets

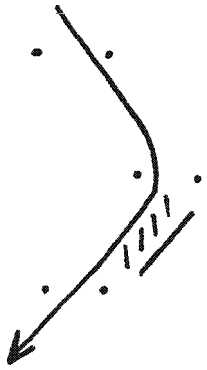


There are essentially 3 ways to do severely offset gates: a combination of duffek stroke on the upstream side, and big sweep stroke on the downstream side; a pivot turn either done entirely with a reverse sweep, or started with a reverse sweep which is then feathered forwards into a duffek/forward stroke; and one- or two-stroke backferries.

* The combination duffek/sweep strokes work reasonably well if they are done as follows. Place the duffek in the water just upstream of the gate for just a second to turn the boat almost sideways in the gate. Then, feather the duffek backwards, which is the fastest way to get the other blade forward into a sweep position. Do sweeps to get over to the next gate. In this instance the duffek is held for the shortest time possible. The boat stops its forward momentum quite a bit in the gate, which is alright because the gates are so offset that any forward momentum is likely to cause you to miss the next gate.

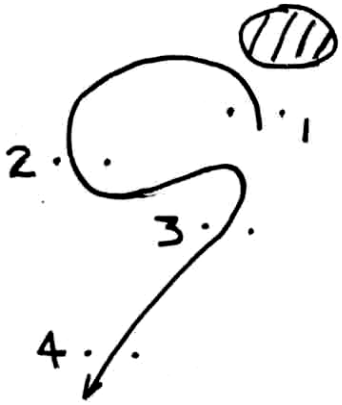
* The trick with the pivot turn is not to hold the pivot too long and thus slow the boat down excessively. Also the objective is to take advantage of the forward lunge of the boat as it falls out of the pivot and accelerate that into cross-current speed. In this situation, Fox tries to do pivots off of duffek strokes rather than with reverse sweeps first. He believes that in general he uses duffeks to replace reverse sweeps more often than most people. This stems from a period of training with Ken Langford in England when Ken used to emphasize the importance of avoiding reverse strokes wherever possible because they slow downstream momentum. Fox reckons, however, that "there are times when reverse strokes are appropriate", and that he used to overdo it in trying to avoid them. Langford explains another reason why reverse sweeps should be avoided in offsets:

  > For all offsets it is important that the boat does not drift sideways more than absolutely necessary.

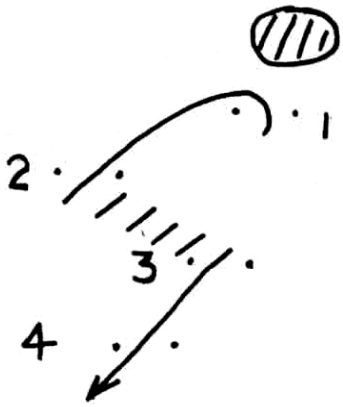


The reason for avoiding reverse sweeps is that the back end drifts and one then needs to cancel out that drift at the time when he ought to be paddling forward.

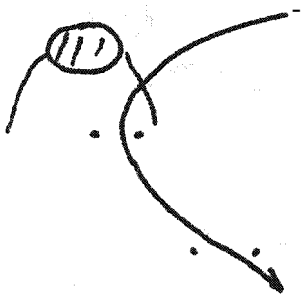
* Backferry? Heresy! When would any REAL slalomist be better off doing a backferry'? I used to think this way, once. But one day we were doing severe offsets on the Feeder Canal with C-1s and K-1s. The C-1s were doing gigantic pivots and claiming that was the best way to do them. Then the K-1s started doing a one- or two-stroke backferry in the gates, sneaking their sterns out of the second gate, and they had faster times than they did on the pivot. Finally, I asked the C-1s to try the backferry (only the ones with their on-side downstream) and they, too, had faster times, much to everyone's amazement, The reason this happened was because in order to do a pivot, the boats had to go upstream higher and take more time to get set up for the pivot. After getting the pivot turn, they still had to paddle madly cross-current back for the second gate. But by backferrying, they didn't have to go up as high for the first gate, and with a couple of backstrokes, they weren't fighting the current very long on the way to the second gate. I think the length of the backferry is probably the key variable: If you have to do a long backferry, it will be slower than a pivot turn. But if it is only one or two strokes, then it's probably faster. The other question is safety: with the pivot you can see all the gates all the time, but with the backferry, you have to sneak your stern under a gate and you can't see it at all.




pivot turn



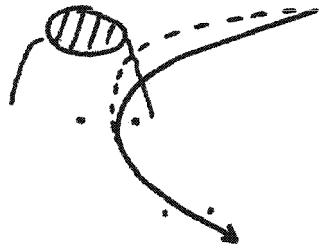

backferry



Offset in an Eddy

Keep as close to the current as you can so you don't go extra distance.

On this move, Fox feels the straight line course is preferable to the broken line one:



To achieve the straight line course, use small duffeks and big, wide sweeps with stern draws. Lean back -- but not so much that you make the boat stall out a bit and loose glide.

"Many people blast right over and then spin the boat at the last second, but they don't always have proper control this way," says Fox.

Two Downstreams Separated by an Eddy

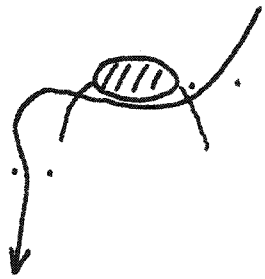
Here are the points to keep in mind on this combination:

* Don't hang on the duffek stroke too long while positioning the boat for entering the eddy.

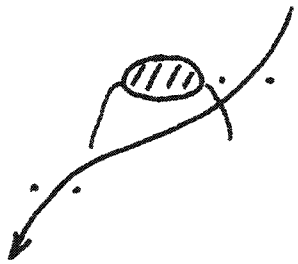
* Try to go across the eddy where it is weakest, so that it won't hold the boat upstream any more than is absolutely necessary. This means going across as far downstream as is feasible. Often, of course, the position of the gates will dictate where you have to cross the eddy, but if you have a choice, go as low in the eddy as you can.

* Paddle across the eddy with a very high stroke rate, as fast as you can.

* On the exit, try to maintain speed by not climbing a wave on the way out of the eddy. Richard Fox talks about this problem: "If this move is on big water and you go across too high in the eddy, quite often you lose all your speed because of the exit. You sometimes have to do a tight turn, which is slow. Or you may have to climb a big wave on the way out which is also slow."

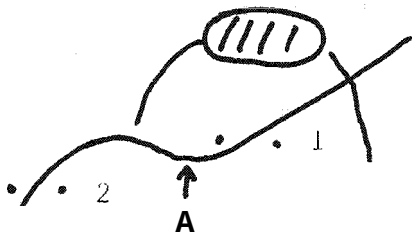


wrong



right

A small water variant of this move is one which Fox thinks is important to practice.




It entails the following problems:

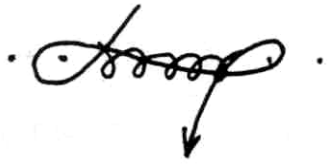
* You might be too broadside in gate 1 and fifty it because you're too concerned about gate 2.

* You might have too much speed when entering the combination and thus overshoot gate 2.

* Your boat peels out a little too soon when the bow catches the current on the way to gate 2 and you hit the gate.

It is best to not enter this move with a lot of speed and do the whole combination very deliberately. At point A you either have to feather your upstream duffek forward to turn the bow upstream sufficiently for leaving the eddy with the proper angle or at point A you have to pivot on an upstream reverse sweep around the pole.

Getting Cross River Via a Hole

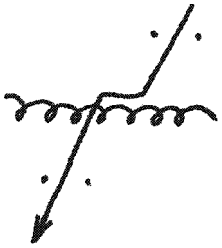


If possible, do not go into the hole because of the potential delay of getting out of it on the other side. Instead, go across the backwash -- it's more predictable. In this case, you will probably have to do a bow sweep on the downstream side to keep from being swept downstream.

However, if you must go in the hole, it's best to hit it with a lot of speed, so that your momentum will carry you quickly to the other side. If you get a lot of speed and the hole is short, you won't have to take any forward strokes in it. If you do have to take some, they should be jabbing, sweep/forward strokes. As the boat reaches the other side of the hole, be ready to lean back and do a bow sweep on the downstream side to prevent the bow from turning downstream prematurely.

This strategy contrasts sharply with the C-1 where it is generally better to go into the hole because of the increased danger in C-1 of getting swept downstream.

Two Gates Separated by a Hole



As a general principle, a hole will throw you harder in the direction your momentum is headed when you hit it, not necessarily the direction the boat is pointed, This is particularly true if the hole is slanted; then it will throw you in the direction of the slant even harder.

The following are some of the major variables you have to consider:

* SPEED. Some holes you should take slowly. Look for little tongues of water which will allow you to go through slowly enough so that you can be very accurate, especially if the next gate is close to the hole.

* AFTER A DROP. If the hole is at the bottom of a bit of a drop, you should speed up just above the drop, take a sweep/forward stroke as the last stroke before hitting the hole and lean back. The speed takes you over the hole a bit rather than having you drop dead into it; the lean and sweep/forward stroke lift the bow up so it doesn't get buried in the hole.

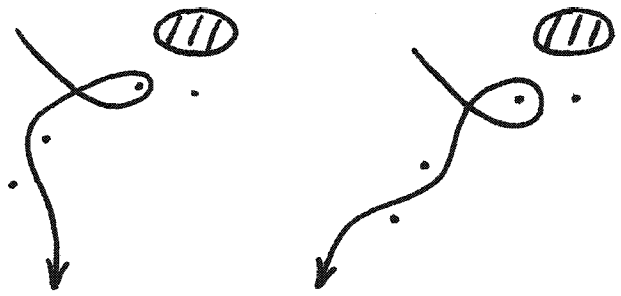
* SLANTED HOLE. According to Richard Fox, "sometimes it is best to get sideways in the hole and have it shoot you through the next gate, as opposed to lining up and hitting the hole with the bow more or less straight downstream." See (a) below. The more classic way is (b) below.

(a)

(b)

The danger of (a) is that while it may be faster, it is also possible to miss the gate entirely by getting shot outside it. With (b) the paddler is less likely to overshoot the gate and if he should miss it on the left, he can always do a reverse sweep on the left to get in the gate.

These gates are seldom practiced, largely because they are seldom found in international races. As Richard Fox puts it, "They are usually found in lower level races where they need gimmicks to make the course harder." Therefore, no one has any particular strategy for them, and the object is simply to be cautious to be sure of cleaning them with the proper presentation, especially if they are in eddies. Yet I think they are useful to practice because they require a good deal of control and precision to get through clean and they offer variety from the normal fare. A couple of variants are shown below:



## WARM-DOWN

Richard Fox has a number of little tricks and stunts he likes to do after a gate workout, as a sort of warm-down.

* Richard can do ANY course with one blade, even reverse upstreams -- he reaches way around to the stern, just like a C-1.

* He can hold the boat up continuously on edge while paddling forward with one blade, like a C-1.

* He can do almost any course with one blade on a cross-draw.

* He does very difficult courses of 3-4 gates, not for time. He does these very slowly and smoothly; it isn't a matter of finding some way to gun it through these courses.

* He does little courses which require him to cramp his arms very close to his chest to avoid hitting poles and practices doing them smoothly. These involve going through gates at extreme angles.

* On a gate that is between two waves, get on the downstream-most wave, ferry over until you approach the gate, then charge forward off the wave, using the momentum you picked up with the ferry. Try to get all the way upstream through the gate and catch the next wave upstream and continue to ferry over to the bank on that wave. Then, change the angle of the boat and bring it back in line with the gate and drop through it reverse, and wind up in the original starting position. Repeat a few times.

* On easier whitewater, do the same thing as above but instead of going through the gate, then coming back through it in reverse, paddle far enough through it so you can do a reverse sweep to put the boat into a pivot turn and come through the gate forwards.

* Do pivot turns in big water, trying to get the bow as high in the air as possible.

* Do continuous end over enders in a hole, first the bow, then the stern, all the while staying in the hole. Norbert Sattler, the master of this, has two ways of doing it.

The first method is done by going straight into a hole from the downstream side and doing a normal bow ender. But as the boat gets up on its bow, do a little reverse sweep with the paddle at the side. The boat will then fall over with its stern in the hole and do a stern ender. When in the stern ender position, do a little forward sweep as the boat stands up. This is much harder because you can't see the hole and have to do it by feel. If you pull it off, the boat will fall down with the bow in the hole -- and round and round you go.

The second method involves doing enders at the edge of a hole. As you are surfing across a hole and reach the edge near the shore, do a reverse sweep on the downstream side and lean the boat upstream to let the stern get caught by the water and make you do an ender with the bow falling into the hole.