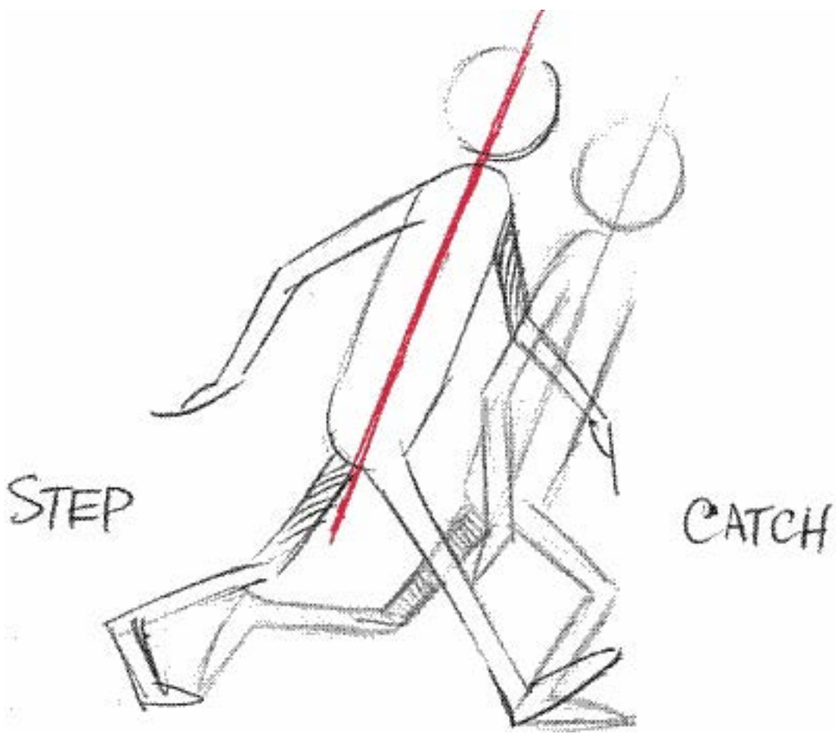
Williams, Richard. The Animator's Survival Kit. New York: Faber and Faber, Inc., 2001. 102 - 103.

WALKS

Advice from Ken Harris:
'A walk is the *first* thing to learn. Learn walks of all kinds, 'cause walks are about the toughest thing to do right.'



THERE'S A TENDENCY TO LEAN IN A WALK.

THE SLOWER IT IS, THE MORE YOU'RE IN BALANCE -

AND THE FASTER MORE OUT OF BALANCE.

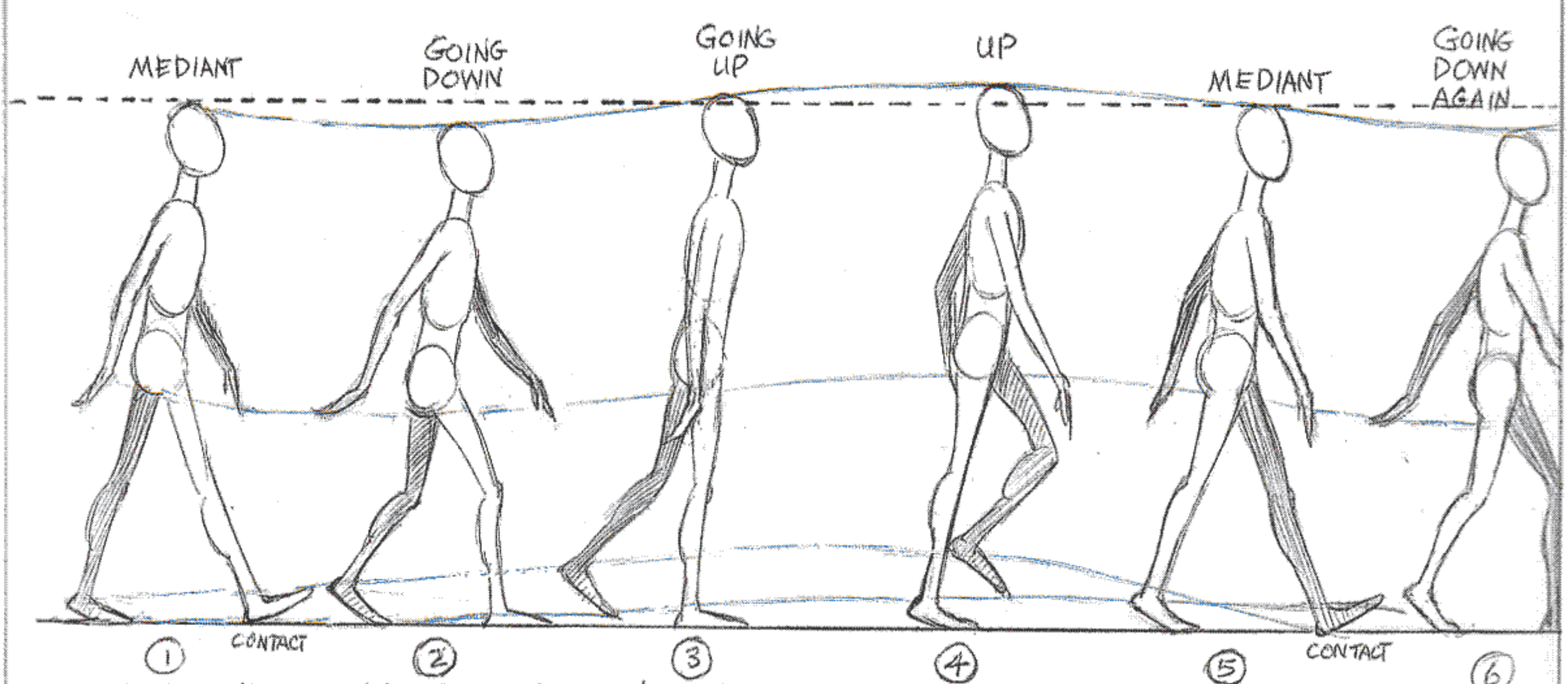
Walking is a process of falling over and catching yourself just in time. We try to keep from falling over as we move forward. If we don't put our foot down, we'll fall flat on our face. We're going through a series of controlled falls.

We lean forward with our upper bodies and throw out a leg just in time to catch ourselves. Step, catch. Step, catch. Step catch.

Normally we lift our feet off the ground just the bare minimum. That's why it's so easy for us to stub our toes and get tipped over. Just a small crack in the pavement can tip us over.

USELESS(?) BUT INTERESTING SCIENTIFIC INFORMATION ON WALKS:

DID YOU KNOW WE PUT A MILLION POUNDS OF WEIGHT ON OUR FEET EACH DAY?



1. EACH ARM MOVES IN COORDINATION WITH the OPPOSITE LEG, GIVING BALANCE and THRUST.

2. AS WE DIP DOWN WE SPEED UP- RELEASING ENERGY. GRAVITY IS DOING SOME OF the WORK.
   OUR ARMS ARE AT THEIR WIDEST POINT.

3. WE'RE LESS THAN ONE CENTIMETER AWAY FROM STUBBING OUR TOE EVERY TIME WE TAKE A STEP. WALKING IS NATURALLY ENERGY CONSERVING. WE HIT OUR FOOT AS LITTLE AS POSSIBLE.

4. AS WE RISE UP WE SLOW DOWN. WE'RE STORING UP POTENTIAL ENERGY

5. OUR FOOT GLIDES DOWN HEEL FIRST FOR A SOFT LANDING

6. OUR CALVES PRODUCE HORSEPOWER- EVERY TIME WE THRUST FORWARD OUR CALF MUSCLE PUTS OUT UP TO ONE HORSEPOWER (760 WATTS).

DOESN'T HELP YOU MUCH WHEN YOU'RE ASKED TO ANIMATE THE WALK OF A SAD BUT HAPPY MAN — OR DOES IT?

BUT

ALL WALKS ARE DIFFERENT.

NO TWO PEOPLE IN THE WORLD WALK THE SAME.

ACTORS TRY TO GET HOLD OF A CHARACTER BY FIGURING OUT HOW HE/SHE/IT WALKS - TRY TO TELL THE WHOLE STORY WITH THE WALK.

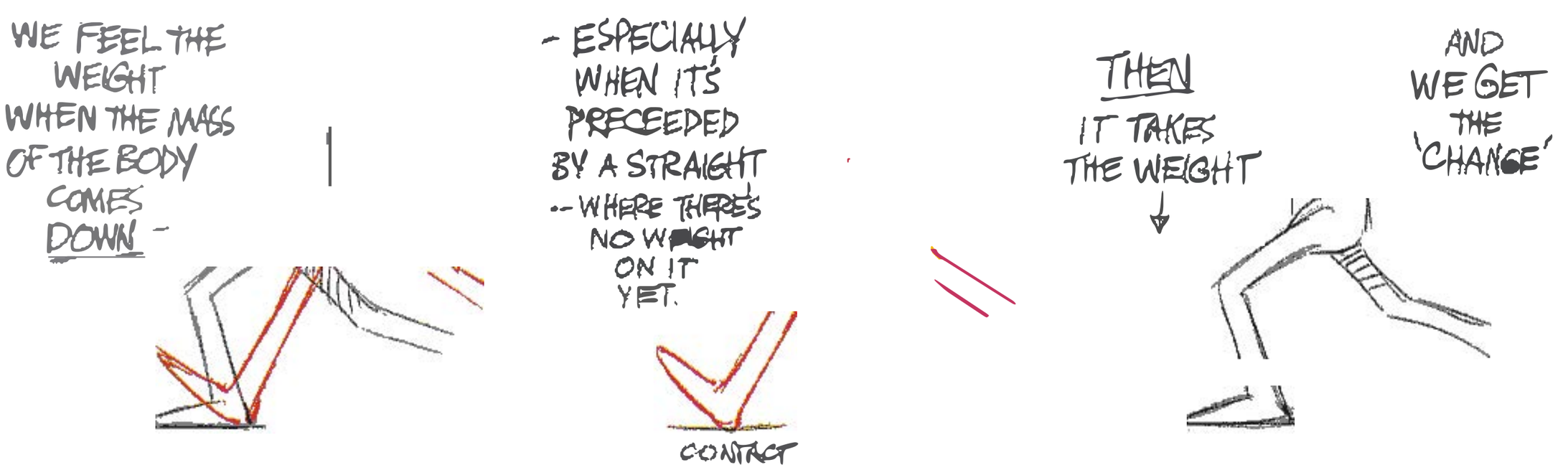
Williams, Richard. The Animator's Survival Kit. New York: Faber and Faber, Inc., 2001. 106 - 117.

GETTING THE WEIGHT

WE DON'T GET WEIGHT BY A SMOOTH LEVEL MOVEMENT.

When we trace off a live action walk (the fancy word is rotoscoping), it doesn't work very well. Obviously, it works in the live action – but when you trace it accurately, it floats. Nobody really knows why. So we increase the ups and the downs – accentuate or exaggerate the ups and downs – and it works.

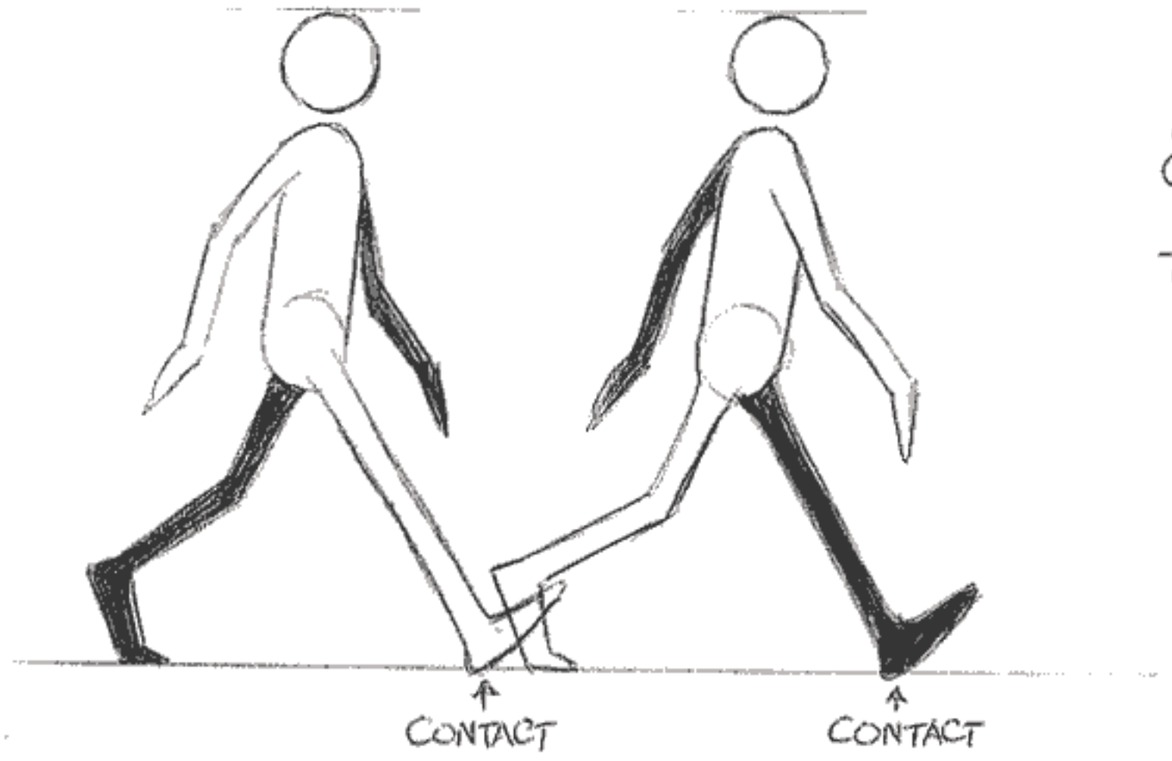
IT'S THE UP AND DOWN POSITION OF YOUR MASSES THAT GIVES YOU THE FEELING OF WEIGHT.



IT'S THE DOWN POSITION WHERE THE LEGS ARE BENT AND THE BODY MASS IS DOWN-- WHERE WE FEEL THE WEIGHT.

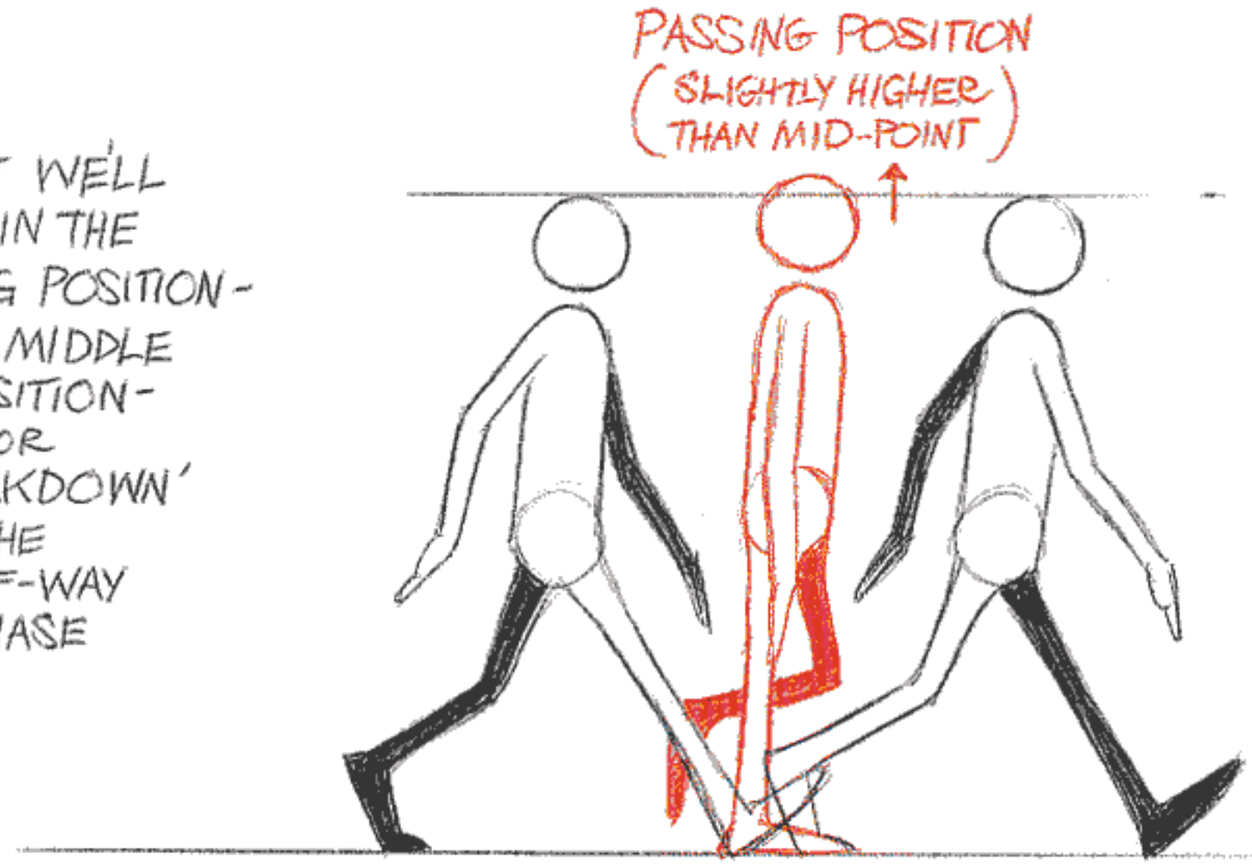
Before we start building walks and 'inventing' walks – here's what happens in a so-called 'normal' walk:

FIRST WE'LL MAKE THE 2 CONTACT POSITIONS –



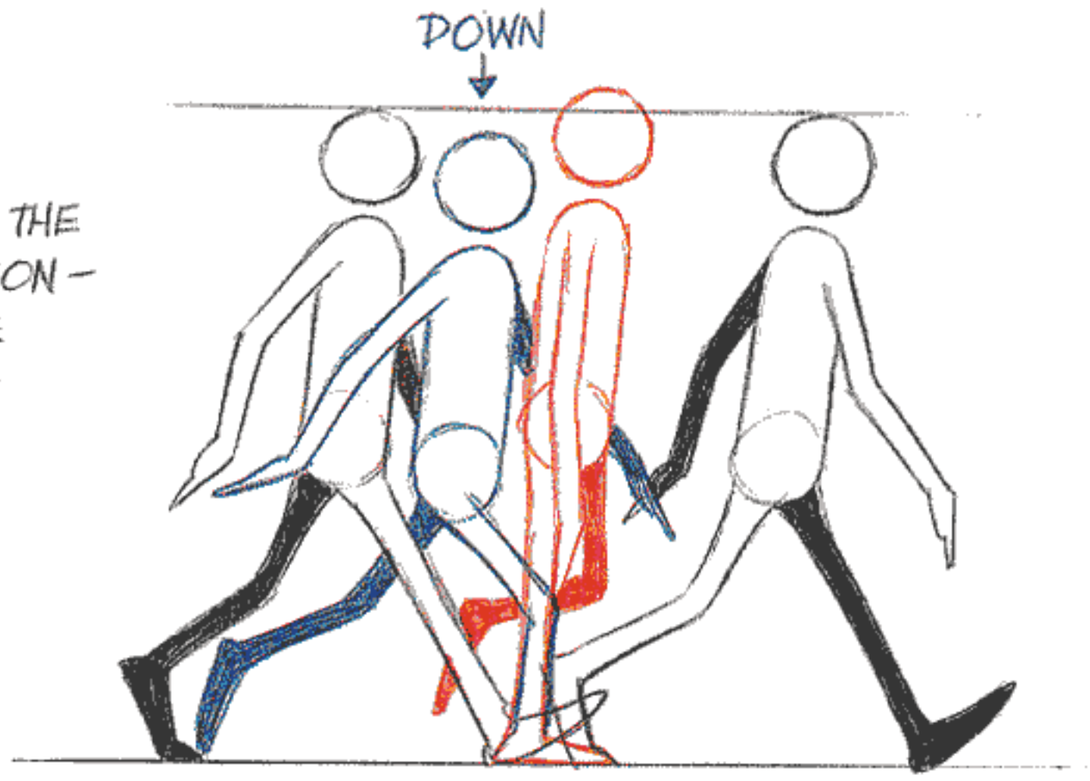
IN A NORMAL, CONVENTIONAL WALK, THE ARMS ARE ALWAYS OPPOSITE TO THE LEGS TO GIVE BALANCE AND THRUST.

NEXT WE'LL PUT IN THE PASSING POSITION – THE MIDDLE POSITION – OR 'BREAKDOWN' – THE HALF-WAY PHASE



BECAUSE THE LEG IS STRAIGHT UP ON THE PASSING POSITION, IT'S GOING TO LIFT THE PELVIS, BODY and HEAD SLIGHTLY HIGHER.

NEXT COMES THE DOWN POSITION – WHERE THE BENT LEG TAKES THE WEIGHT

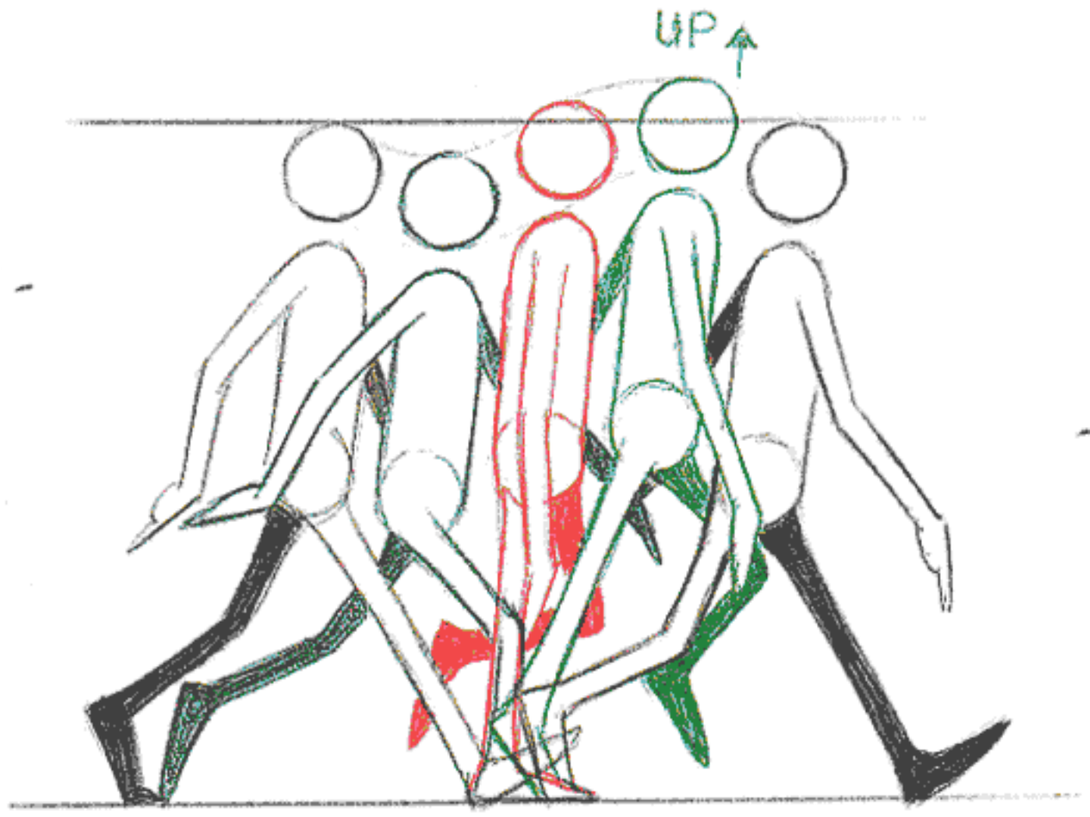


AND JUST TO COMPLICATE LIFE - IN A NORMAL WALK THE ARM SWING IS AT IT'S WIDEST ON THE DOWN POSITION

(AND NOT ON the CONTACT POSITION AS WE'D PREFER.)

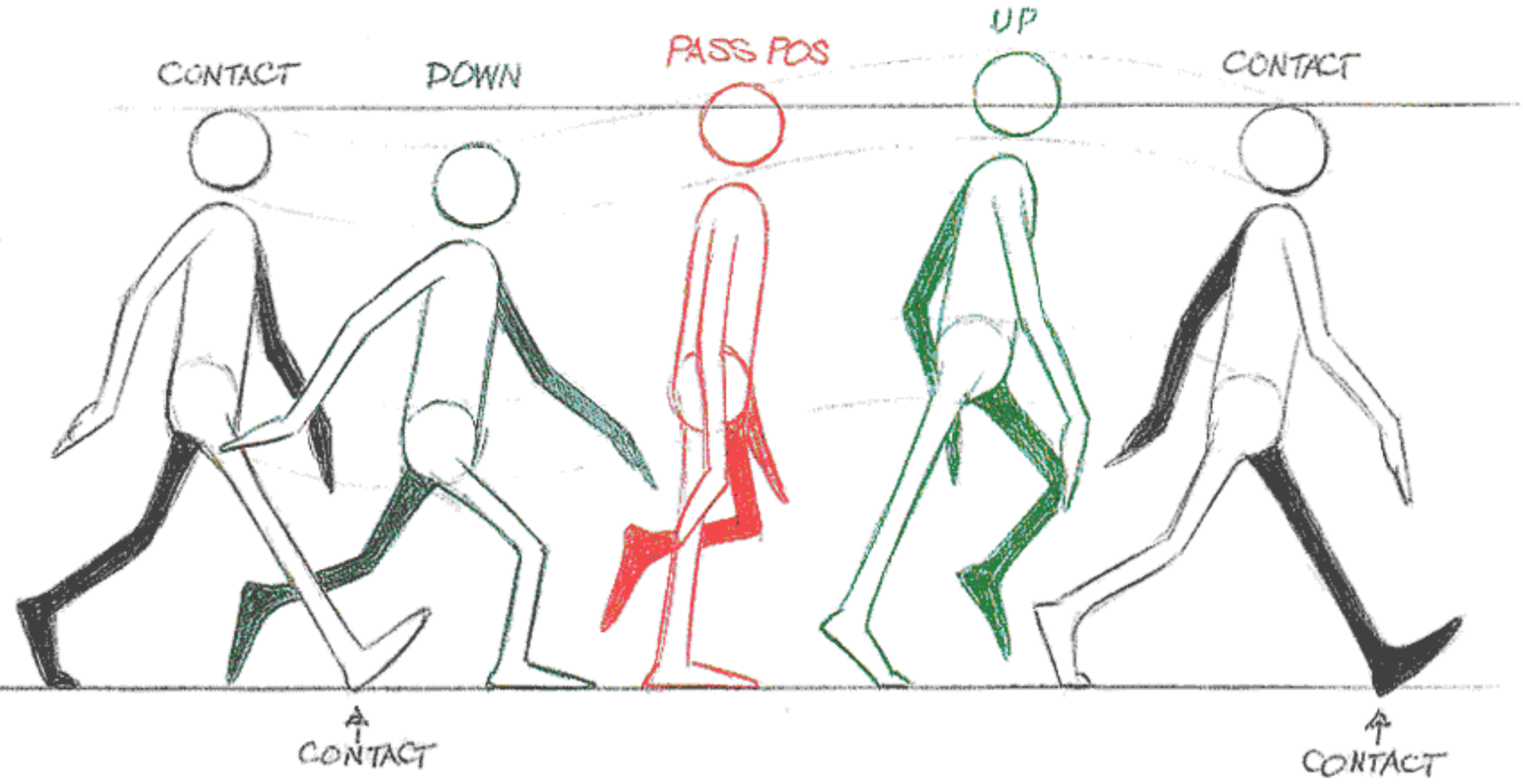
WE CAN IGNORE THIS AS WE PROCEED BUT WE MIGHT AS WELL UNDERSTAND THE NORM BEFORE WE START MESSING AROUND.

NEXT WE PUT IN THE UP POSITION - -THE PUSH-OFF.

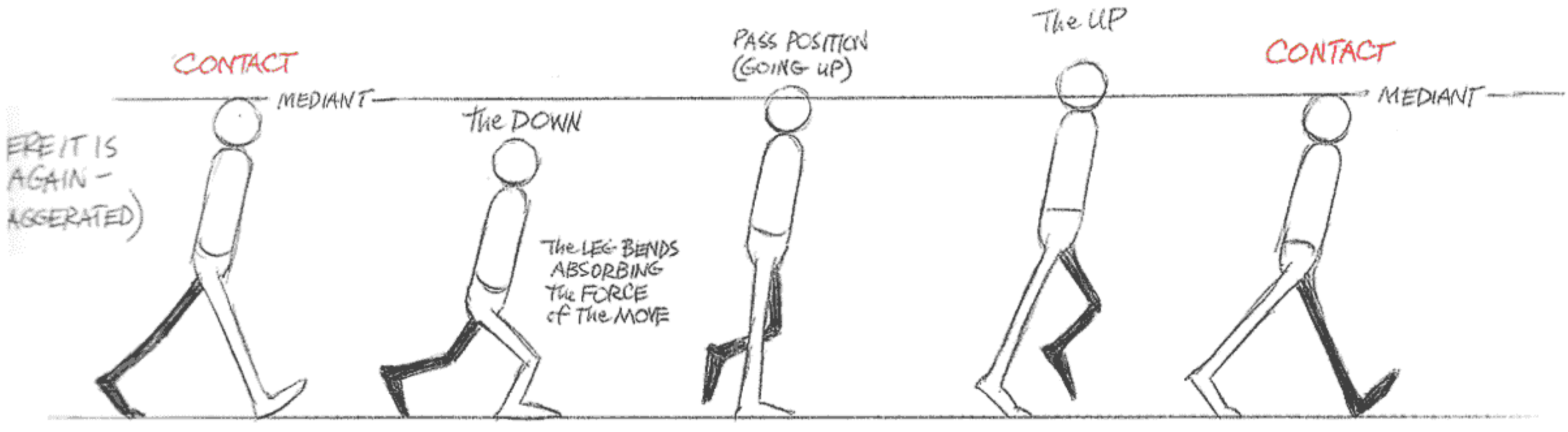


The FOOT PUSHING OFF LIFTS The PELVIS, BODY and HEAD UP TO ITS HIGHEST POSITION - THEN The LEG IS THROWN OUT TO CATCH US ON The CONTACT POSITION - SO WE DON'T FALL ON OUR FACE.

LETS SPREAD IT OUT AND EXAGGERATE IT A LITTLE MORE SO IT'S CLEARER...



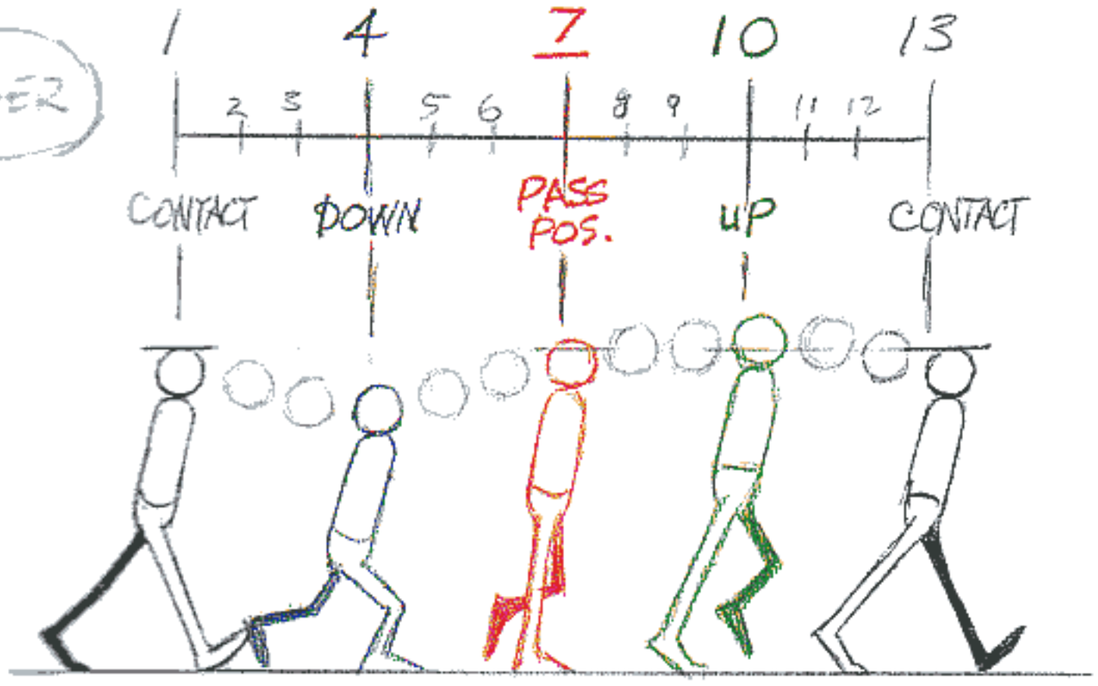
SO, IN A NORMAL 'REALISTIC' WALK
The WEIGHT GOES (DOWN) JUST AFTER the STEP - JUST AFTER The CONTACT.
2ω) The WEIGHT GOES (UP) JUST AFTER The PASSING POSITION.



SET THE TEMPO

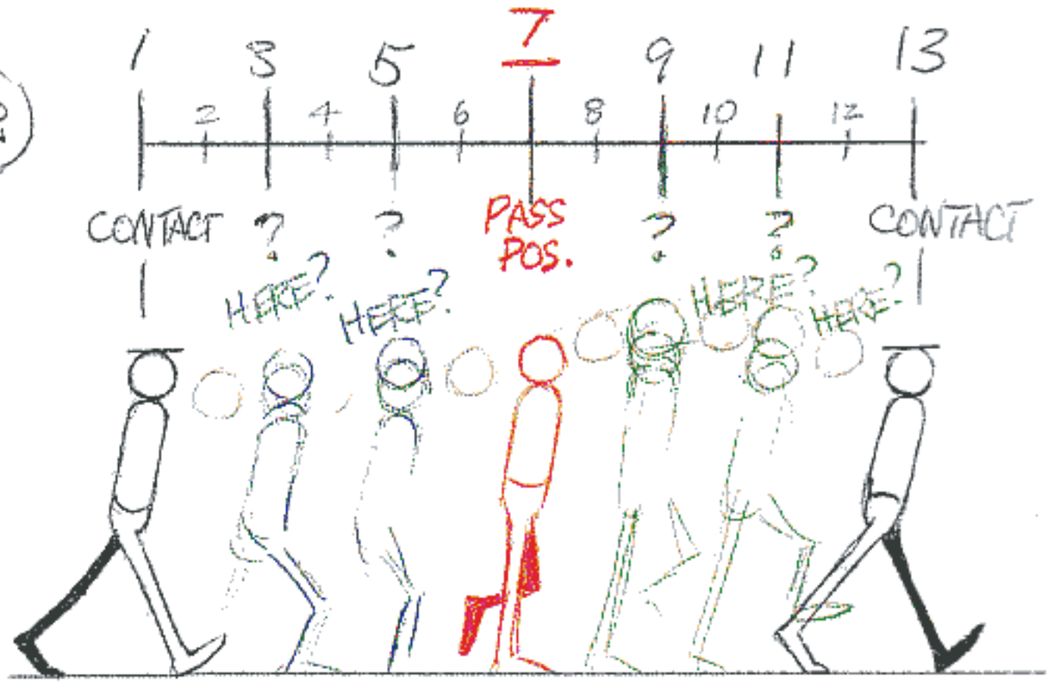
The FIRST THING TO DO IN A WALK IS SET A BEAT.
GENERALLY PEOPLE WALK ON 12's - MARCH TIME (HALF A SECOND PER STEP. TWO STEPS PER SECOND.)
BUT LAZY ANIMATORS DON'T LIKE TO DO IT ON 12'S.
IT'S HARD TO DIVIDE UP. YOU HAVE TO USE 'THIRDS' — THINK PARTLY IN THIRDS.

EITHER



THE IN BETWEENS ARE GOING TO BE ON THIRDS.

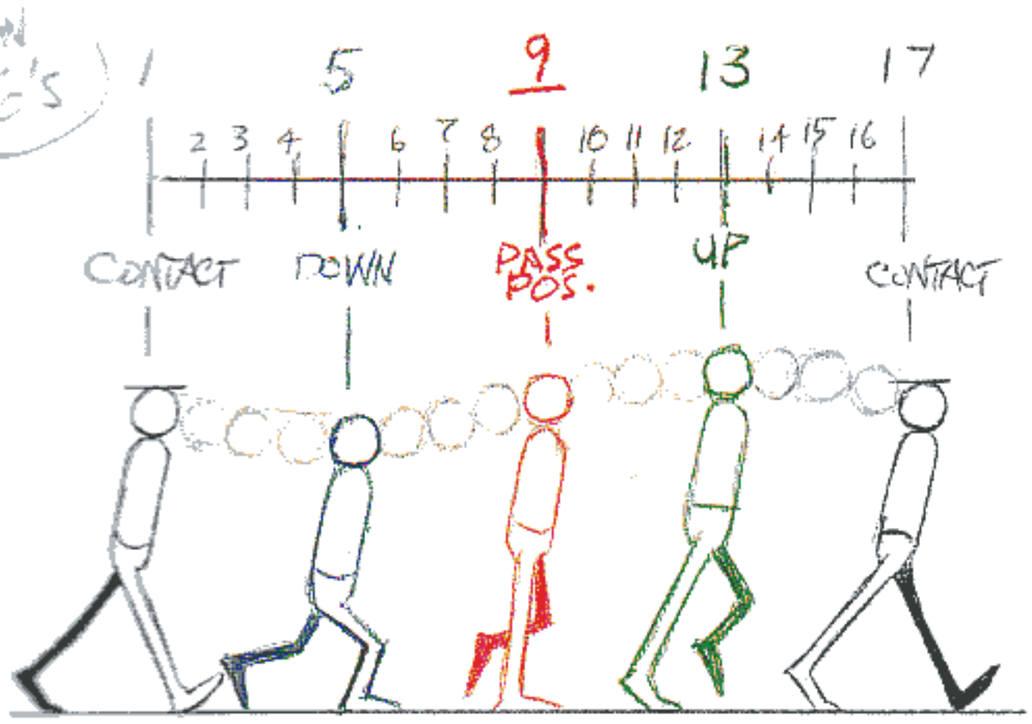
OR



OOPS - NOW WHERE DO WE PUT THE DOWN OR UP?
HEY, THIS IS GETTING HARD - ESPECIALLY WHEN WE GET INTO THE ARMS AND HEAD, AND 'ACTING' AND DRAPERY — MAYBE THERE'S AN EASIER WAY?

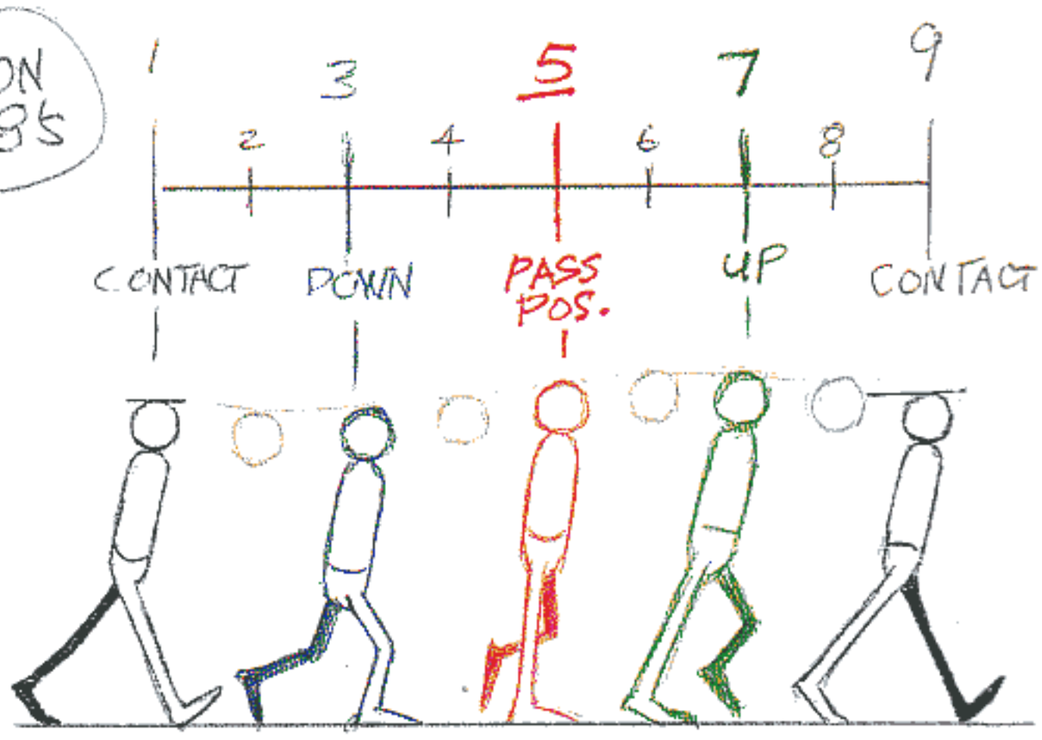
THERE IS AN EASIER WAY — HAVE HIM/HER WALK ON 16'S — OR WALK ON 8'S.
MUCH EASIER TO WALK ON 16'S - IT'S EASY TO DIVIDE UP — SAME THING ON 8'S.
(EACH STEP = 2/3 SEC) (3 STEPS PER SEC.)

ON 16'S



WHEW, THAT MAKES LIFE EASIER.
NICE EVEN DIVISIONS NOW -

ON 8S



(REDUCED UP AND DOWN ACTION - SINCE IT'S TAKING PLACE IN A SHORTER TIME)

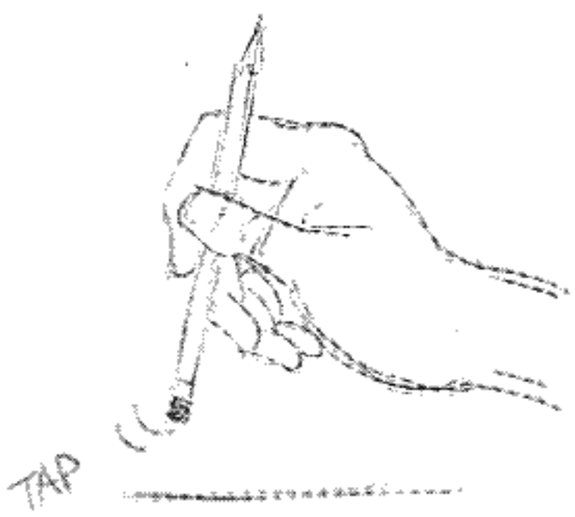
THIS IS WHY CARTOON WALKS ARE OFTEN ON 8's.
BUMP, BUMP, BUMP, 3 STEPS A SECOND.

SO, WE SET A BEAT:

4 FRAMES = A VERY FAST RUN (6 STEPS A SECOND)
6 FRAMES = A RUN OR VERY FAST WALK (4 STEPS A SECOND)
8 FRAMES = SLOW RUN OR 'CARTOON' WALK (3 STEPS A SECOND)
12 FRAMES = BRISK, BUSINESS-LIKE WALK – 'NATURAL' WALK (2 STEPS A SECOND)
16 FRAMES = STROLLING WALK – MORE LEISURELY (⅔ OF A SECOND PER STEP)
20 FRAMES = ELDERLY OR TIRED PERSON (ALMOST A SECOND PER STEP)
24 FRAMES = SLOW STEP (ONE STEP PER SECOND)
32 FRAMES = ...'SHOW ME THE WAY...TO GO HOME'...

The best way to time a walk (or anything else) is to act it out and time yourself with a stopwatch. Also, acting it out with a metronome is a great help.

I naturally think in seconds – 'one Mississippi' or 'one little monkey' or 'a thousand and one, a thousand and two' etc.



Ken Harris thought in feet, probably because he was so footage conscious – having to produce thirty feet of animation a week. He'd tap his upside-down pencil *exactly* every two thirds of a second as we'd act things out.

Milt Kahl told me that on his first week at Disney's he bought a stopwatch and went downtown in the lunch break and timed people walking – normal walks, people just going somewhere. He said they were *invariably* on twelve exposures – right on the nose. March time.

As a result, he used to beat off twelve exposures as his reference point. Anything he timed was just so much more or so much less than that twelve exposures. He said he used to say 'Well, it's about 8s.' He said it made it easy for him – or *easier* anyway.

Chuck Jones said the *Roadrunner* films had a musical tempo built into them. He'd time the whole film out, hitting things on a set beat so they had a musical, rhythmic integrity already built in. Then the musician could hit the beat, ignore it or run the music against it.

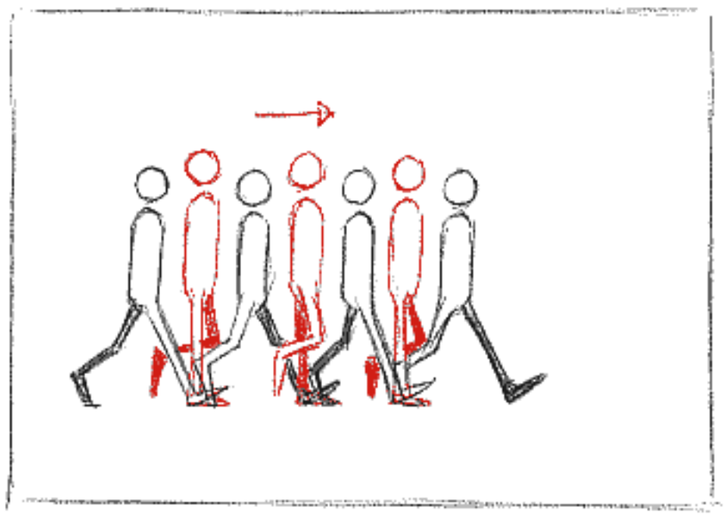
Chuck told me that they used to have exposure sheets with a coloured line printed right across the page for every sixteen frames and another one marking every twelve frames. He called them '16 sheets' or '12 sheets' I guess '8 sheets' would be the normal sheets.

I mentioned once to Art Babbitt that I liked the timing on the *Tom and Jerrys*. 'Oh yeah,' he said dismissively, 'All on 8s.'

That kind of tightly synchronized musical timing is rare today. They call it 'Mickey Mousing' where you accent everything – it's a derogatory term nowadays and considered corny. But it can be extremely effective.

In trying out walks, it's best to keep the figure simple. It's quick to do and easy to fix – easy to make changes.

ALSO, IN DOING THESE WALKS - TAKE A FEW STEPS ACROSS The PAGE OR SCREEN -



DON'T TRY TO WORK OUT A CYCLE WALKING IN PLACE WITH The FEET SLIDING BACK, ETC.
THAT ALL BECOMES TOO TECHNICAL. WE WANT OUR BRAIN FREE TO CONCENTRATE ON AN INTERESTING WALK PROGRESSING FORWARD.

WE CAN WORK OUT A CYCLE FOR The WALK LATER... PERHAPS JUST FOR The FEET and BODY. BUT THEN HAVE The ARMS and The HEAD PERFORMING SEPARATELY.

CYCLES ARE MECHANICAL and LOOK JUST LIKE WHAT THEY ARE - CYCLES.

CHUCK JONES TELLS OF HIS TINY 3 YEAR OLD GRANDDAUGHTER SAYING,
"GRANDAD, WHY DOES The SAME WAVE KEEP LAPPING ON The ISLAND?"

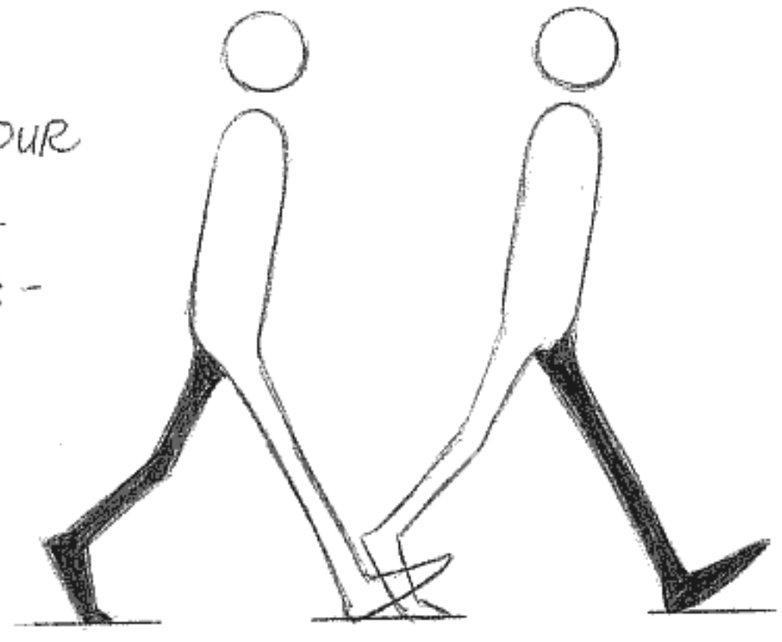
Incidentally, if you are using colours as I am here, it works just fine when you film them. I often have a lot of colours going at first, and you still see the action clearly.

Now we're going to start taking things out of the normal:

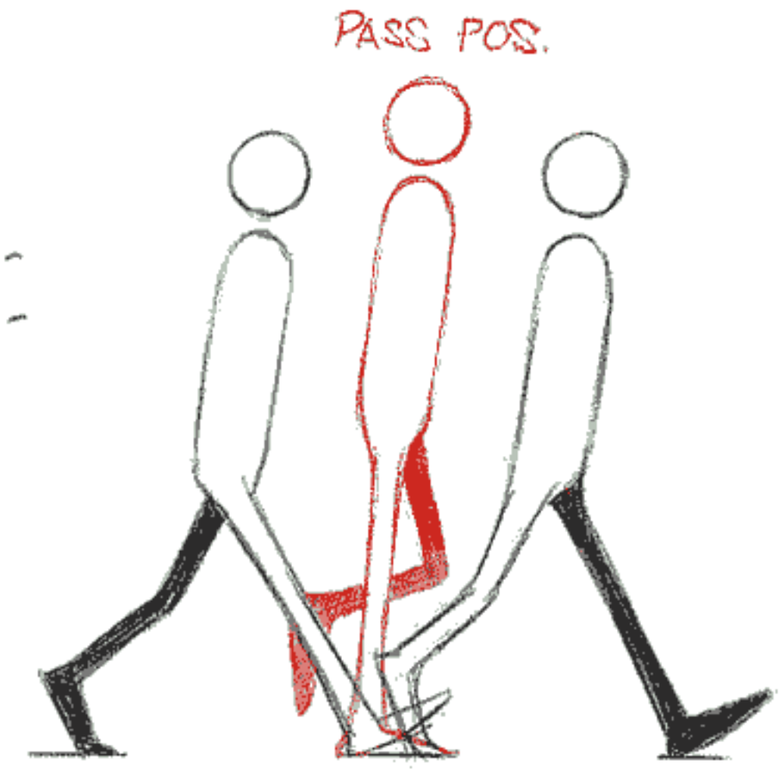
The PASSING POSITION OR BREAKDOWN

THERE'S A VERY SIMPLE WAY TO BUILD A WALK. START WITH JUST 3 DRAWINGS -

FIRST WE MAKE OUR TWO CONTACT POSITIONS -



THEN PUT IN
THE MIDDLE POSITION -
THE PASSING POSITION -
OR
BREAKDOWN



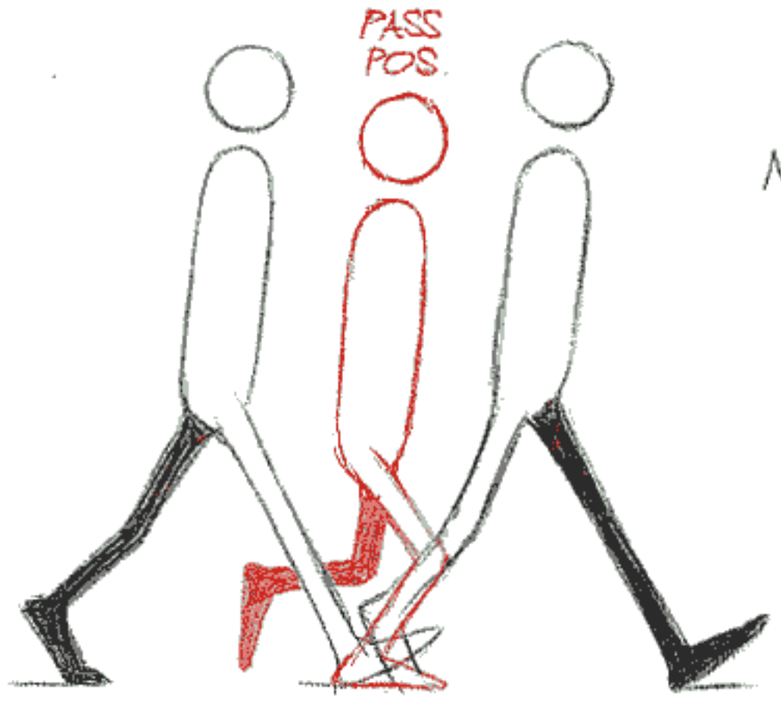
THIS TIME
WE'RE RAISING IT
HIGHER THAN
PREVIOUSLY.
WE'RE MAKING IT
THE UP POSITION -
- THE HIGH.

WE'VE OMITTED
THE BENT LEG
TAKING THE WEIGHT
AND OUR CONTACTS
WILL ACT AS
THE LOW

When we join these up with connecting drawings, the walk will still have a feeling of weight because of the up and down. We can make tremendous use of this simple three drawing device.

BUT LOOK WHAT HAPPENS IF WE GO DOWN ON THE PASSING POSITION!

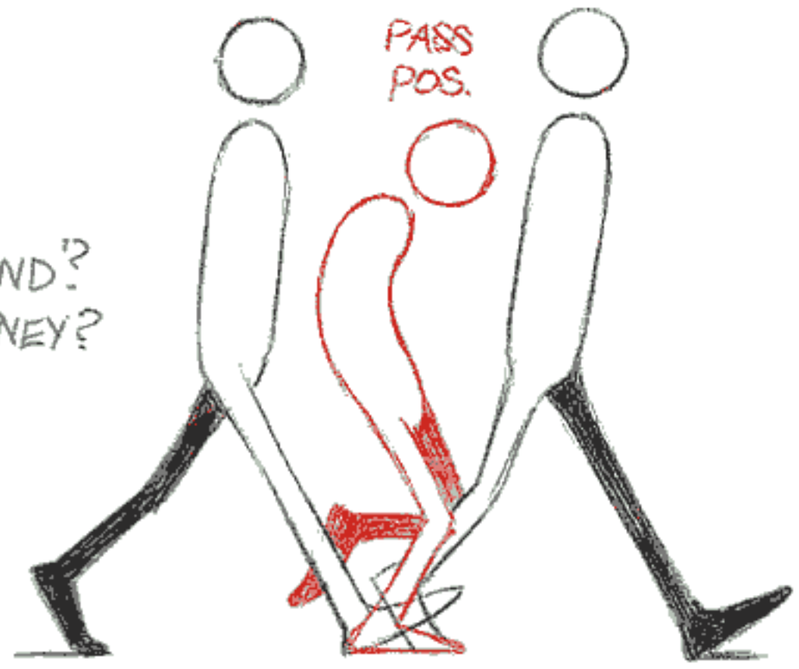
WE GET A VERY
DIFFERENT WALK -
A 'CARTOONY' WALK



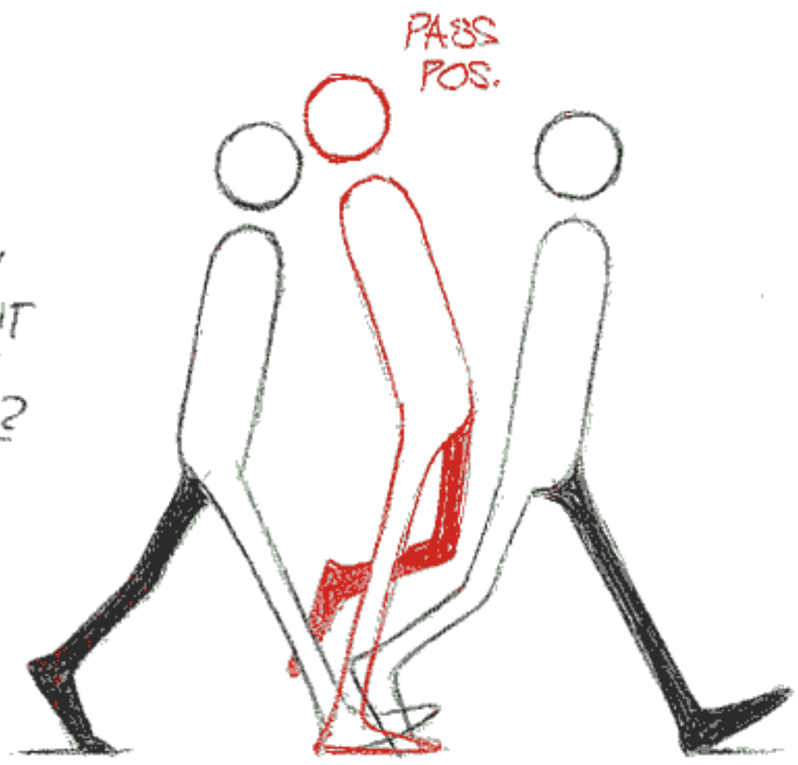
NOW THE PASSING
POSITION IS THE
LOW AND THE
CONTACTS ACT
AS THE HIGH -
STILL GIVING A
FEELING OF
WEIGHT.

THE CRUCIAL THING IS THIS MIDDLE POSITION AND WHERE WE PUT IT.

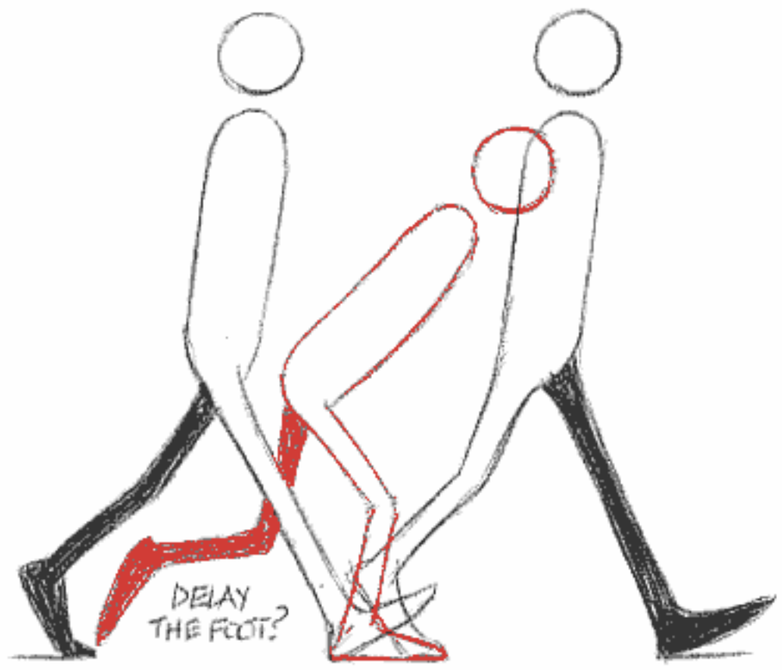
SQUASH
WITH A BEND?
LIKE A KIDNEY?



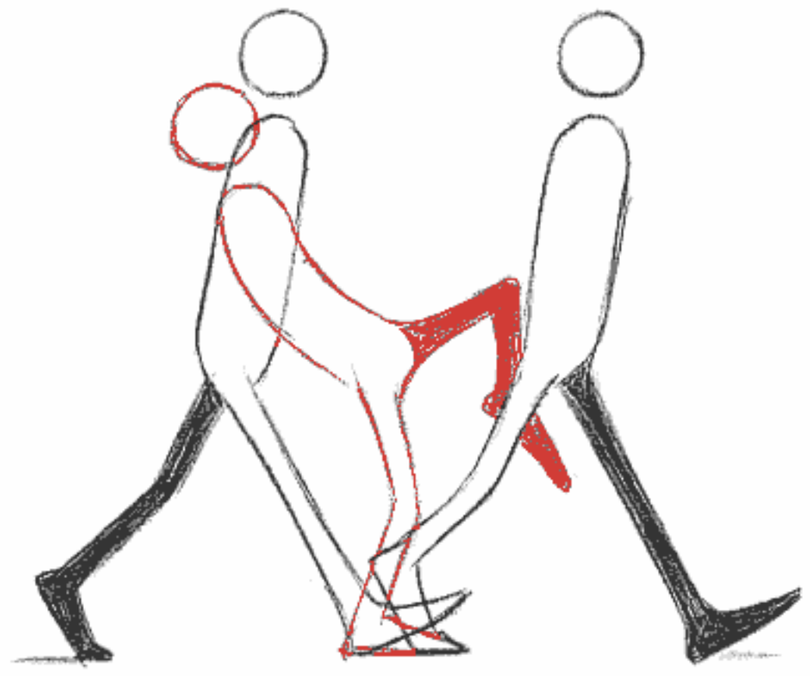
HOW
ABOUT
THIS
ONE?



THESE CONTACTS ARE ALL THE SAME BUT THE MIDDLE POSITION UTTERLY CHANGES THE WALK

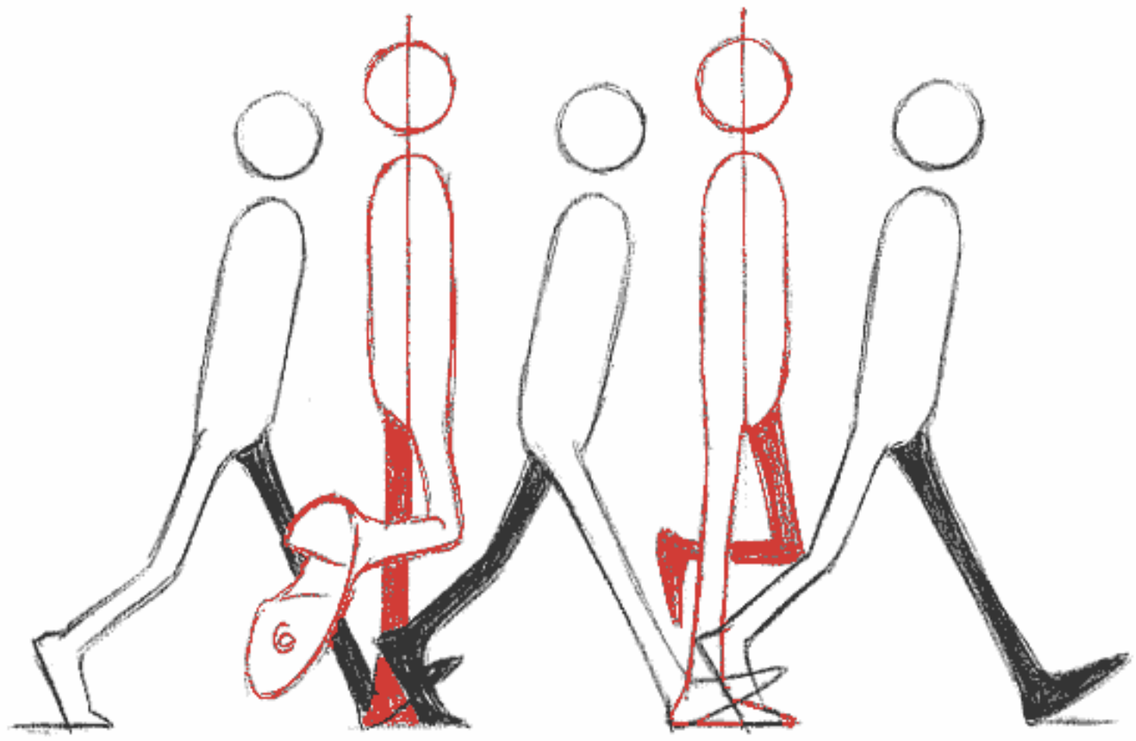


(OBVIOUSLY WE'LL NEED THE TIME TO ACCOMODATE BROAD MOVES LIKE THIS)



IN A SLOW STEP WE MIGHT GO AS FAR AS THIS— ALMOST A SNEAK.

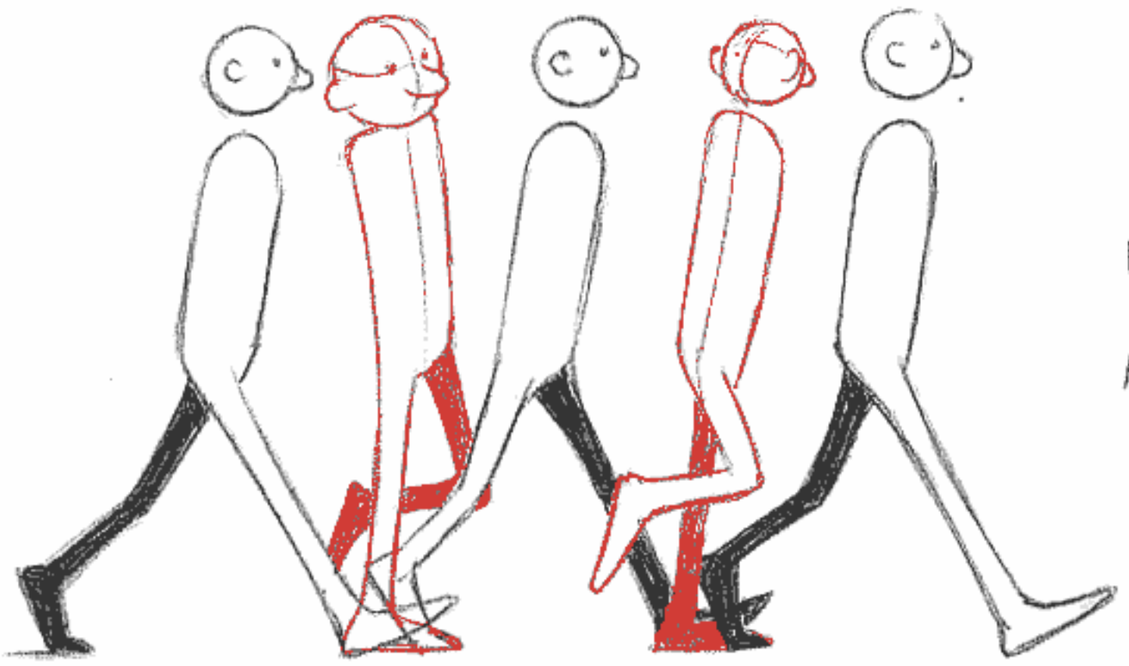
WHAT IF THE FEET SWING OUT SIDEWAYS ON THE PASSING POSITIONS?



AND MAYBE STRAIGHTEN THE BODY ON THE PASS POSITIONS?

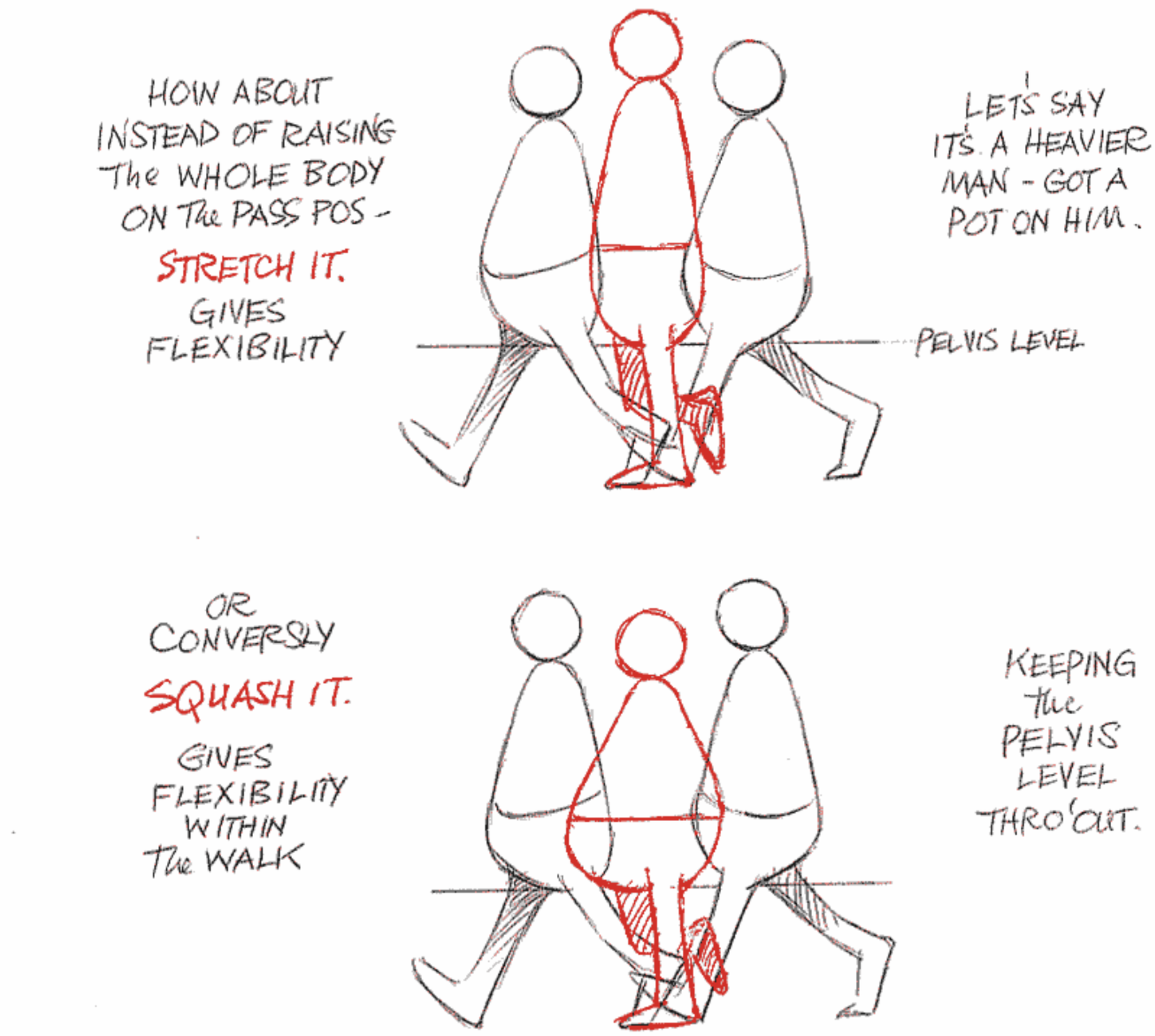
OR JUST TILT THE HEAD AND SHOULDERS SIDEWAYS ON THE PASS POSITIONS -

THE KEY THING IS WHERE DO WE WANT TO PUT THE MIDDLE POSITION -



NOT TO MENTION WHAT WE CAN DO WITH THE HEAD, HANDS, ARMS OR FEET -

THE VARIATIONS ARE ENDLESS -



To my knowledge, I think Art Babbitt may have been the first one to depart from the normal walk or the cliché cartoon walks. Certainly he was a great exponent of the 'invented' walk. He became famous for the eccentric walks he gave Goofy – which made Goofy into a star. He even put the feet on backwards! He made it look perfectly acceptable and people didn't realize they were backwards!

Art's whole credo was: 'Invent! Every rule in animation is there to be broken – if you have the inventiveness and curiosity to look beyond what exists.' In other words, 'Learn the rules and then learn how to break them.'

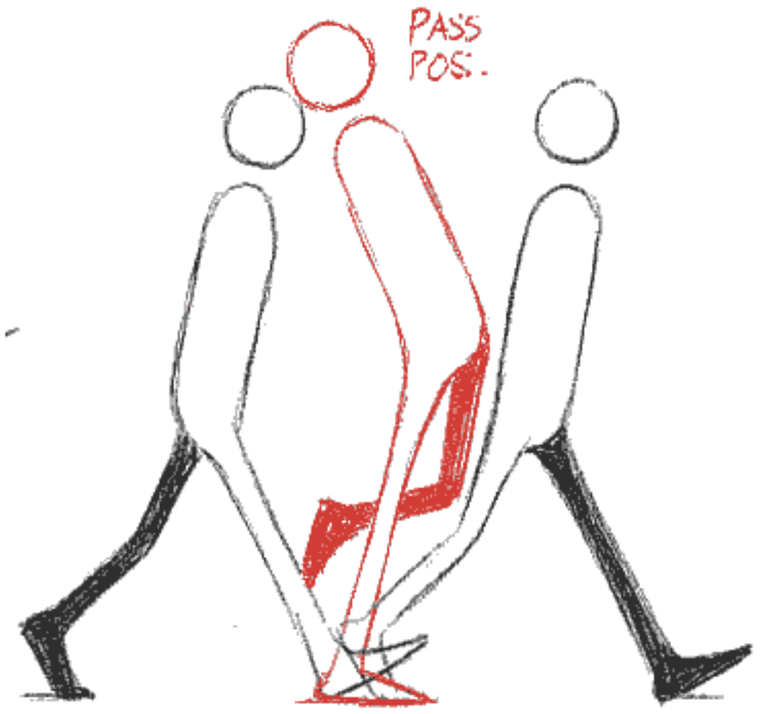
This opened up a whole Pandora's box of invention.

Art always said, 'The animation medium is very unusual. We can accomplish actions no human could possibly do. *And* make it look convincing!'

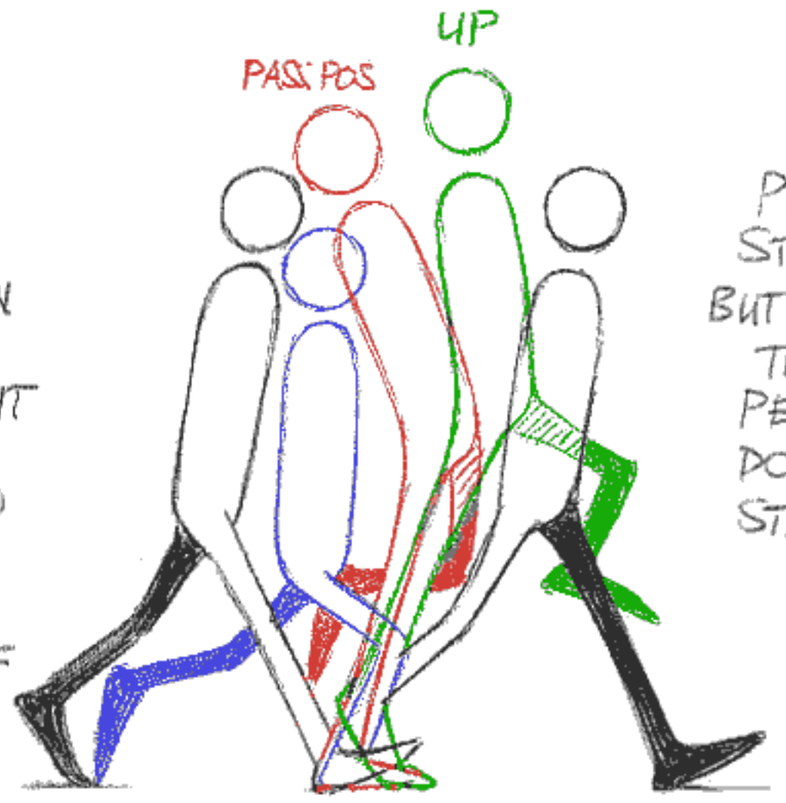
This eccentric passing position idea is a terrifically useful device. We can put it anywhere and where we put it has a huge effect on the action. And who says we can't put it anywhere we want? There's nothing to stop us.

For that matter, we can *keep on* breaking things down into weird places – provided we allow enough screen time to accommodate the movement.

TAKE THIS ONE FOR INSTANCE -

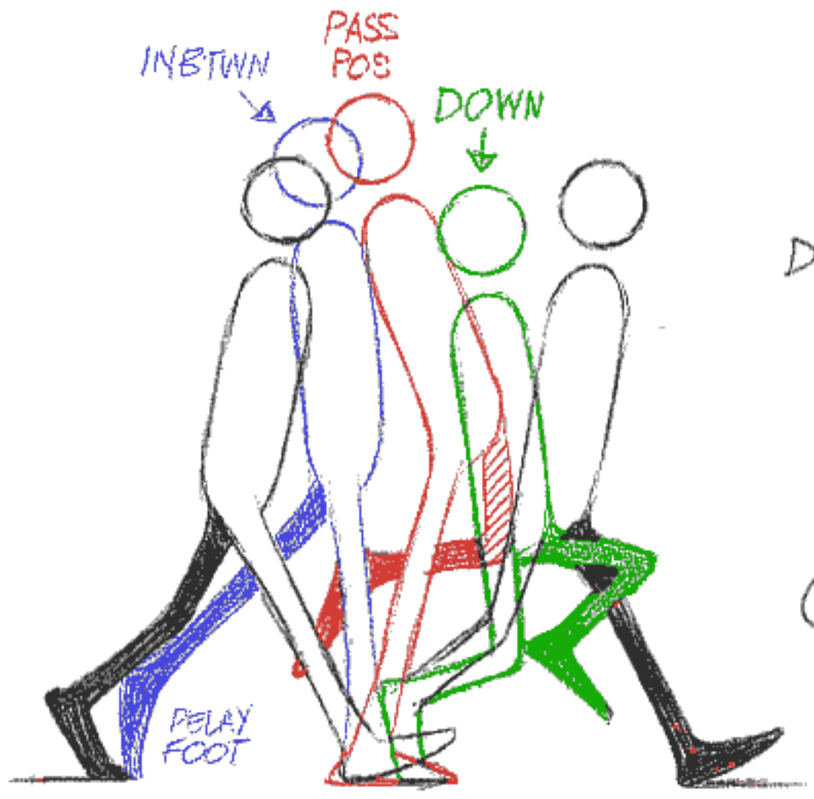


WE CAN STILL GO DOWN TO TAKE THE WEIGHT AND STILL GO HIGHER ON THE PUSH-OFF



PRETTY STRANGE - BUT WHY NOT TRY IT? PEOPLE DO MOVE STRANGELY

THIS WOULD BE PRETTY WILD - PUT THE DOWN WHERE THE UP WOULD NORMALLY BE - AND BEND THE LEG.



WHERE THE DOWN POSITION WAS - PUT A STRAIGHT INBETWEEN BUT DELAY THE LEG (FOR BALANCE)

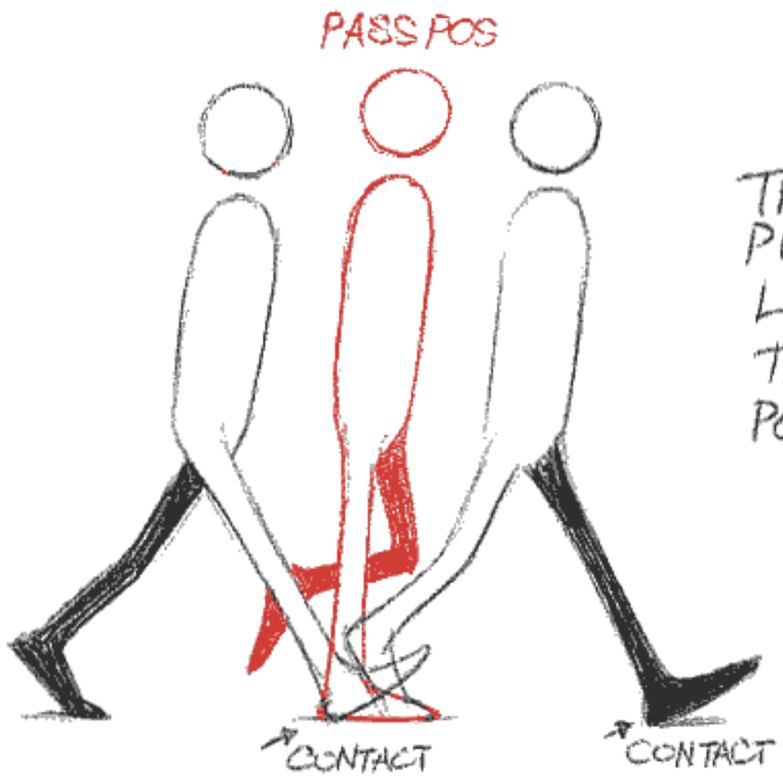
Anyway, back to the normal:

2 WAYS TO PLAN A WALK

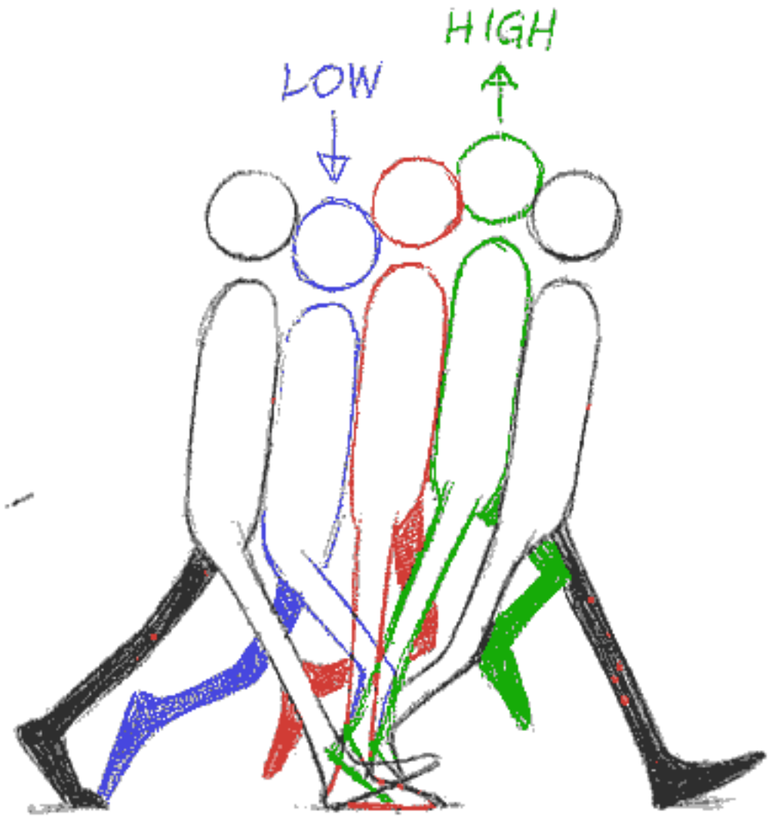
REVIEWING THE 'CONTACT' METHOD:

FIRST WE MAKE THE CONTACT POSITIONS

THEN WE PUT IN THE PASSING POSITION (NORMAL)



THEN WE PUT IN THE LOW AND THE HIGH POSITIONS -



I've found that this contact method is *the one that gets you through – takes you home*. It's especially suitable for natural actions – which is what we mostly have to do. I've found it to be the best way to do most things.

Milt Kahl worked this way. 'In a walk, or anything, I make the contact positions first – where the feet contact the ground with no weight on them yet. It's kind of a middle position for the head and body parts – neither an up or down. I know where the highs and lows are and then I break it down. Another reason I do it is because it makes a scene easy to plan.'

'I always start off with that contact because it's a dynamic, moving thing. And it's much better than starting with the weight already on the foot, which would be a very static pose!'*

The cleverness of this approach is that we've already taken care of the up and down in the first three drawings. Of course, we can put the passing position up, down or sideways – anywhere we want. But having the downs already set helps us invent; it gives us a simple grid on which to get complicated, if we want.

We know it'll already have weight and so we're free to mess around and invent eccentric actions, or actions that couldn't happen in the real world.

Again, we're not stuck with one method or the other. Why not have both? Not only but also . . .

I highly recommend the contact approach for general use, but starting with the down position is very useful for unconventional invention.

From now on we'll use both approaches.

