



THE CLEVER BODY

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ISBN 978-1-55238-594-4

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7 | IMAGINATION

MOTOR IMAGINATION | Our previous analysis of skilful and habitual actions drew our attention to the relationship between the body's capacity to preserve experiences and values, and to deal with new challenges. The act of touching illustrates the close connection between retention of past behaviour and anticipation of a particular movement. As our hand intends to pick up a glass or our foot moves toward the gas pedal of the car, we re-enact the past and expect a certain type of bodily contact with the object. The act of gently pushing the pedal or bringing the glass to our mouth involves both the anticipation and memory of a particular tactile sensation.

Just as our body remembers and anticipates sounds and odours, it is also able to recall and expect particular tactile sensations. The hand already knows what kind of impression that contacts with snow, iron, sand, or wood will produce. Similarly to the learning and refinement of any skill, tactile memories are acquired through the circular and reciprocal relationship between sensing and moving. In possession of these memories, surgeons anticipate both sensations and movements while making very precise incisions with their scalpel on the unseen parts of the body. My excellent dentist delicately uses his drill and relies on a similar tactile anticipation to direct the fine movements of his fingers. The basis of all deft motion is the body's ability to expect sensations and movements.

In order for the reader to better understand the continuum of bodily memory and anticipation, I would like to draw upon the original insights of Melchior Palágyi. In various publications, Palágyi discussed the most important characteristics of the sense of touch and motor or tactile imagination.¹ He demonstrated that, in touching, we not only experience, but also "imagine" specific qualities and forms. *Tactile images*, as he called them, and tactile impressions have equally important significance when handling objects. For example, reaching for the doorknob, our hand projects tactile sensations that correspond not only to the actual sensations, but also to our approaching movement. When someone's hand moves to touch a particular part of our body, we anticipate a yielding or resisting movement. Without such a bodily response, we would hardly notice the actual touching of our skin. We become aware of the imagined movement in as much as a very small movement of our body follows it.² Our bodily response would occur even in the absence of a tactile contact. Seeing a needle advancing to our finger, we experience

some sensations before the object makes contact with our skin. We have an imagined sensation that constitutes a response to the imagined continuation of the movement.

Just as much as there is no actual tactile sensation without tactile anticipation or imagination, so there is no actual movement without virtual or imagined movement. Indeed, whenever we touch an object or step on something, our hands or legs anticipate the appropriate movements. Lifting up heavy objects requires a different movement than lifting light ones. The perception of heaviness prompts not only the actual motor approach to, and lifting of, the object, but also the virtual movement of approaching and lifting as well. We realize how intensely we anticipate a movement when, for instance, we are caught in a deception: the seemingly heavy object is, in fact, light.

Palágyi argues that the sense of touch is our most fundamental and complete sense since it allows us to distinguish between an object and its image copy. Our touch provides us with a primary experience of reality and space. It is the corresponding tactile imagination that elicits the perception of the location of the material object and its spatial dimension. The tactile contact of an object induces a virtual movement that leads to the experience of its spatial extension. "Imagination is, so to speak, the organ for the perception of space."³ A common experience well illustrates the fundamental role that virtual movement plays in our knowledge of things. If we cover the rim of a cup with the palm of our hand, we touch it merely in two places. But the touch of two segments is sufficient to induce the imagined movement of the circle, and this virtual movement makes us perceive the cup's opening as round. Through virtual movements, we can correctly perceive the form and location of objects in space.

Not only tactile sensations, but also visual and auditory ones, provoke virtual movements. If we attentively look at a tree or a tire on a car, we touch these objects with imagined movements. As already mentioned, the basic affordance of a practical object or a work of art arouses in us the need to touch. The execution of virtual movements precedes the tactile contact and we feel this anticipation in our gently quivering hand. I would think that a petanque player, whose hand anticipates a throw that knocks away the other player's leading boule, feels an even stronger sensation. Once again, his virtual movement guides and determines the form of his actual movement.⁴

Imagined tactile movements are not to be equated and confused with the visual representation of movement. If such confusion occurs, it is due to the "tyranny" of the latter over the former. For us, as seeing persons, the tactile image is overpowered by our visual representation. Hence, most of the time, our imagined movements remain unconscious. Only in some particular situations may we become conscious of them, such as in a shopping centre or at the airport where we tend to use an automated sidewalk. Preoccupied with our destination, we usually step on this transport device without thinking. If, for some reason, the apparatus fails to function, we suddenly feel a queer sensation in our legs. The real sensation of the material, elicited by our actual movement, does not correspond to the anticipated sensation. Although we are well aware of the breakdown, our body's prediction remains a habitual one; it is appropriate for a mobile belt and not for an immobile one. When we use an escalator, our body ordinarily anticipates the movement and sensation pertaining to a moving surface (when we step on) or an immobile one (when we step off). Whenever, in our daily life, our hands or legs unexpectedly encounter a resistance, or conversely, its absence (reaching in

vain for the last step on the stairs), we take some notice of our body's ability to imagine both movements and sensations that correspond to the real movements and sensations.

If we bring a piece of lemon close to our mouth, we anticipate a sensation, one that is induced by our imagined bite. True, the representation of a bite also prompts the feeling of an acid-like sensation.⁵ If we anticipate the tactile contact with a metal door, our hand feels the cold of the material. Inasmuch as we anticipate sensations, which tend to trigger real sensations, we are able, in retrospect, to become aware of the imagined movement. In fact, we react to the actual sensation itself by performing virtual movements that summon up further sensations.

Motor anticipation is a unmediated vital process and not a conscious psychological event arising from a visual impression.⁶ The born blind are able to imagine geometrical figures and anticipate a great variety of tactile sensations and movements and, therefore, their tactile imagination enjoys autonomy while, for the seeing persons, it is tied to visual representation. If I represent my moving palm around a ball, the movement and the ball are given together as a whole. For the blind persons, the round shape and the movement are envisaged as a dynamic process consisting of elements succeeding each other. The groping examination of their hand constructs the shape by remembering and anticipating both movements and sensations. These are structured not in terms of set directions, fixed goals, and measurable distances, but in those of speed, correlation, transition, and limit. They do not conceive a virtual movement as a unified form, made up of segments and held at a distance in space. For them, it consists of the awareness of an unfolding. We may illustrate the difference if we consider two different aspects of a throw: we might focus on the relationship between the throw and an external

object, namely its destination, or on the feeling of the fluent progress of the motion that comprises possibilities (hit or miss). In the first case, we visualize a global form; in the second one, we consider a dynamic process, developing with an open outcome.

In fact, to execute a movement is to imitate the imagined performance. Unless the motor situation suddenly changes, the actual movement follows the anticipated one. The movement of turning the knob on a door is preceded by the turning motion that we execute in imagination. Whenever we envisage a dive into the water, our take-off involves an imagined movement followed by the execution of the dive itself. To state again, both the imagined and actual movements are in reciprocal relationship with the anticipated and actual sensation. There is, however, an important difference between the two kinds of movement. The imagined one does not encounter material resistance. It lacks the kinaesthetic experience of tension, relaxation, pressure, or the shift of weight of the body – all indispensable information, required for the proper learning and control of movements.

Still, motor skill proficiency calls for the “schooling” (*Ausbildung*) of motor imagination.⁷ It must become keener and more focused. But this, on its turn, can be perfected through the execution of tactile movements. Palágyi suggests that we first press a small rod against our free hand and, subsequently, establish similar contact with the surface of various objects. The repetitive contacts with the material lead to the sharpening of our motor imagination.

FEELING AND INVERSE IMAGINATION | How do we come to perform new, unexpected movements if sensation and movement seem to determine each other? Normally the anticipated sensation of the

slippery surface of the handrail or the tile floor induces a definite kind of motor response. If there is a deviation from the expected and actual movement, says Palágyi, the source of the novelty is our feeling. It is so, because sensations awaken in us feelings and these lead to new imagined movement patterns.⁸

In other words, if our feelings undergo some modifications, the change spurs movement variations. The imagined movement is then "deflected," as Palágyi puts it. The process of "deflection" (*Ablenkung*) plays a significant role in our life, especially in our creative activities. Because feelings have such a deflecting power, our body produces not only "direct images" but also "indirect" ones. Direct images correspond to the situation as we experience it. The indirect ones comprise movements that, under the influence of feelings, we recall or invent. Because we find ourselves overcome by feelings, we are able to exert only a partial influence on the shift from direct to indirect images.

For no apparent reason, the bodily contact with an object can give rise to unexpected feelings that lead to surprising movement images. We are inclined to infer the existence of these indirect images when we realize that our body has performed a surprising movement. Circularity exists on this level too: feelings produce unexpected movement images and these arouse in us new feelings. We can now better understand what prompts some musicians to introduce into their play startling deviations. The movements of their fingers trigger momentary feelings and the emotional responses to these movements modify their touch.

Feelings affect our relationship to our past. Inducing indirect images and the subsequent modification of both sensation and movement, they revive past experiences. That is why tactile images lead us not only to the perception of the characteristics of the object, but also to the recovery

of past encounters with the same or a different object. Our touch elicits feelings that make us focus on the past rather than on the present.⁹ Thus a tactile contact with a piece of stone or wood may lead to the retrieval of diverse textural effects, or it may even prompt the visual memory of the form of the object. When we produce the visual representation of a previously seen tree or a ball, we do this, most often unconsciously, with the help of imagined hand, leg, or eye movements.

Jean Cocteau, in his *Journal d'un inconnu*, described how his tactile movements prompted the representation of some familiar objects. He went back to the street in Paris where he had spent a large part of his childhood. By trailing his fingers along the houses, fences, and walls, he hoped to retrieve some of the pleasant memories of former times. His attempt did not yield a satisfactory result: his hands merely perceived the unevenness of the surface. He suddenly realized that he had to bend down and extend his hand at a lower level, as if he was still a child. A change of bodily posture, allowing him to retrieve different tactile sensations, opened the floodgate to the past: "Just as the needle picks up the melody from the record, I obtained the melody of the past with my hand. I found everything: my cape, the leather of my satchel, the names of my friends and of my teachers, certain expressions I had used, the sound of my grandfather's voice, the smell of his beard, the smell of my sister's dresses and of my mother's gown."¹⁰

The hand trailing the wall yields not only visual but also nasal and aural memories. I have previously alluded to a direct link between sound and movement: the rhythmic succession of tones compels us to move. The perception of tones elicits in us virtual movements that give rise to actual dancing, marching, or simply humming. Conversely, we can hear

sounds from the distant past if, by virtually moving our sound-producing organs, we are able to reproduce them.

The imaginative contact between the liquid and our tongue provokes the memory of the taste of a wine. Overpowered, our sensitive nose seems to be passively delivered to the influence of the abundance of olfactory impressions. Yet, the detection of smell is affected by various factors and, here too, movements could easily facilitate, or hinder, the olfactory process. The keenness of smell develops over time, mainly through an active encounter with a great variety of objects – flowers or wines, for example. Therefore, the motions of sniffing and inhaling that we execute in imagination may prompt the memory of the odour of burning leaves. We are able to recall the smell of an old book if our nose virtually approaches its open pages.

All these imagined movements, as we have just described, cannot be divorced from the upsurge of our feelings. Readers who were delighted by Marcel Proust's great novel would surely consider smell and taste as the ultimate and most resilient access to the past. Yet musical motives and tactile contacts are no less effective in conjuring up the memory of some distant experiences. Because of their close ties to feelings, they provide powerful cues to recall the past. To walk with bare feet on sand or pebbles immediately brings back some of our pleasant childhood memories. Indeed, as I remarked before, touching creates a more intimate contact with objects or people than does vision. The qualities detected by our hands resonate in us and produce a significant and personal echo in us. A friend's delicate touch on our face or elbow heightens our emotions. Buytendijk shrewdly pointed out that we like to describe lasting dispositions through qualities of the touch: "it is not by accident that qualities

such as warm, cool, chilly and cold, sharp and obtuse, strong and weak, rough, soft, smooth, slippery and sticky may be used as qualifications for human behavior and so-called characters."¹¹

With feelings aroused, tactile contacts perhaps make us more attentive to the values that we detect in some objects. Hence our attraction for old books or antique furniture. Hence also the easy adaptation of the musician's body to a new instrument. The hands and legs of the organ player touch the pedals and manuals and also recognize certain emotional and musical values "produced" by the organ pipes. His play is then considerably shaped by the emotional experience that the tactile contacts elicit, and the music.¹²

CREATIVE HANDS | Our bodily imagination allows us to place ourselves into a new situation. We can transcend the existing present conditions and regulate our behaviour accordingly. "It is an unparalleled wonder that life, without abandoning the place it occupies, can nonetheless behave in such a way as if it had escaped to another place in space and time."¹³ If one of the fundamental features of the living body is the ongoing tendency to transcend its physical limit, this openness is in part made possible by the "imaginative flight" from any momentary dwelling place.

Arnold Gehlen considers this ecstatic relationship one of the chief requirements of human survival: we must continually free ourselves from the limits imposed by a given situation in order to satisfy our needs.¹⁴ He also points out that our imagination endows things with "tactile values" – symbols of tactile sensation such as weight, consistency, or temperature. We must be aware of, and expect, tactile sensations in order to execute and refine a vast range of motor skills. It is not only what we touch with

our hands or legs that is invested with some value, but also what we are able to reach with the help of some intermediary object or instrument. The billiard player's shot does not merely direct the trajectory of the cue ball, but also anticipates a particular tactile contact that generates the further movement of the object ball. The hand senses the impact in advance and moves the cue accordingly.

Henri Focillon, for his part, asserted that there could be no real knowledge of the world without the "tactile flair" of the hand:

The hand knows that an object has physical bulk, that it is smooth or rough, that it is not soldered to heaven or earth from which it appears to be inseparable. The hand's action defines the cavity of space and the fullness of the objects that occupy it. Surface, volume, density and weight are not optical phenomena. Man first learned about them between his fingers and the hollow of his palm. He does not measure space with his eyes, but with his hands and feet. The sense of touch fills nature with mysterious forces. Without it, nature is like the pleasant landscapes of the magic lantern, slight, flat and chimerical.¹⁵

But we can attribute to our tactile imagination an inventive function as well. This resides essentially in the human capacity to make use of past encounters with things, experimenting with them, and testing hypotheses.

Music comes from, and calls for, tactile contact with an instrument. The tactile anticipation of hitting a key on the piano is closely connected to the hearing and anticipating of the sounds. The hand anticipates and imagines both sensations and movements to the same extent as the ear hears, in advance, the various characteristics of music, though the hand's projections usually remain unnoticed. I believe that musicians introduce

some improvisatory elements into their play – they slightly change the rhythm, intensity, or colour – by allowing their hands to rely on their own formative power. Yet some, much like certain painters, fearing that their art might be considered as a purely manual occupation, like to stress the “vital role of the mind.” But music cannot merely be the outcome of a series of premeditated orders. The unconscious anticipation of the hands is just as indispensable to music-making as is the ability to phrase a melody or hear chords. During the learning process of a piece, it cannot be ignored. If a young cello student does not know when and how to use the vibrato, it could be helpful to allow the fingers to select the appropriate rocking motion. “Let the body take over,” as Barry Green suggests in his useful book.¹⁶ The colouring of the note could become more natural and distinctive if it is generated by the inventive power of the forearm and the fingers.¹⁷

Palágyi was well aware of the importance of movement imagination in artistic creations.¹⁸ He carefully observed some Hungarian painters at work in their studios. He realized that no artist could neglect the images “issued” by the hand. Some were able to evoke, on a flat surface, the illusion of plasticity and depth. They created the impression of movement, volume, weight, sensuousness, strength, energy and, above all, life. Those, however, who allowed the inertia of their tactile imagination produced “ethereally tottering, immaterial, and false” works.¹⁹

With sculpture, the artist’s tactile imagination imparts the material with the characteristics of volume, density, palpability, weight, and inner vitality. The stone or iron is then vibrant with desire and intention, acts of its own accord, moves in spite of its immobility. Curiously, some sculptures are filled with liveliness and energy and manifest a peculiar reciprocity: the sculptor’s tactile virtuosity carves figures that also seem to

possess a sense of touch. In a Romanesque church, when we look at the carved animals biting each other, we realize how the artists were able to endow the stone with one of the fundamental aspects of both human and animal life – the touch. We find the same mysterious liveliness in works that represent the loving solicitude of the hands and the gentleness of the face. Some figures seem to speak to the spectator, or even express a wish or concern. If we have a desire to return to these sculptures, our admiration is, without a doubt, due to our discovery of a breath of life that the artist's hand was able to imprint into the inert matter.²⁰

Making a sculpture out of stone essentially consists of creating a form with the help of various tools, above all chisels and hammers. Sculptors carve the material, cut out pieces, and hollow out cavities. By taking away larger and smaller quantities from the block of stone and moving from the exterior to the interior, they progressively create a form. Once again, the anticipation of tactile sensations and the corresponding imagined movements by the hand are the constitutive elements used while making repeated contacts with the stone.

"The hand," insists Focillon, "is not the mind's docile slave."²¹ To better understand the hands' contribution, we are advised to close our eyes and caress a carved surface. Now we feel the round and angular aspects of the material, the variation of levels, shapes, and textures. Rudolf Arnheim wrote a descriptive narrative of his hand running over a sculpted head: "Then my hands move along the curves of the jaws converging toward the bow of the chin, which approaches me. The roundness of the chin is paralleled by that of the lips. The nose, finely honed, moves toward me, and the cheeks converge in the shallow depressions I know are the place of the eyes, although these depressions hardly indicate the eyes' presence."²² Such an exploration reveals those dynamic tensions

and particular emphasis that the tactile imagination conveys to the stone during the process of creation. The hand is able to simplify or amplify some motives or, by reproducing certain details, to highlight the individual physiognomy and expression of a figure.

Gert Selle, in his book on the education of the arts, relates a somewhat similar experience.²³ He recommends that students close their eyes and grab and crumble a hunk of moist peat moss. As the material is pressed, or tapped upon, the hands receive a great variety of tactile sensations and movement suggestions. Without opening their eyes, the students are asked to represent on a canvas all the remembered sensations – the resistance, roughness, or softness of the material. Such an exercise helps their sensitive fingers to anticipate tactile qualities and recall them through the practice of drawing forms. Tactile imagination has a dual function: it helps to preserve experiences and to project movements and sensations. “The hands are not simply unskilful and clumsy. They must be considered wise as they commit an act of sabotage against the dictate of the disembodied look. They often resist it, in as much as they can hardly hold the crayon correctly, not to mention the inhibited gestures and the lines that convince the eyes. Thus they make everything incorrectly, as if they knew everything better than the stupid, prejudiced head.”²⁴ Drawing is not merely copying. It is the accomplishment of a “creative mimetic activity,” wherein the “embodied tactile imagination” plays a central role. The purpose of blind-drawing is to habituate students to rely on their sense of touch and to produce forms through the fruitful collaboration of their “seeing hands” and “touching eyes.”²⁵

Prominent theorists of art have long expressed similar views. Focillon remarked that the artist’s hand does not merely translate a detailed inner

representation. Rather, it displays an uncommon sense of daring and exploring. Endowed with a "magic power," an "unheard-of assurance," it "seems to gambol in utter freedom" and produces the most diverse and astonishing forms: "It searches and experiments for its master's benefit; it has all sorts of adventures; it tries its chance."²⁶

There are moments, observes Géza Révész, when we would rather surrender to the initiatives and skills of our hands than to follow the dictates of our intellect. We have the impression that "the hand is more intelligent than the head and is endowed with a greater creative power."²⁷ Whether we play on the piano or carve a figure out of wood, the hand suggests corrections and innovations. Whatever result we may achieve, concludes Révész, our work arises out of a "cross-fertilizing" interplay of the hand and the mind.²⁸

The significance of this relationship was recognized even outside the artistic domain. Alfred North Whitehead explained the weakening of the ability to innovate by the absence of the reciprocal influence of the hand and the brain.²⁹ The "disuse of hand-craft" is the direct consequence of the embedded tendency to oppose the body to the mind. It is reinforced by the prevalent view that to see is much more important than to touch.

Why does an activity carried out by the hand promote original ideas? Unless we are called upon to perform a repetitive task, manual activities involve presence and require attentiveness. Rarely are we so much ourselves as when absorbed in a captivating task, tinkering with a motor, planting flowers, or playing on a musical instrument. Because of its close ties to feelings, our tactile sense is not merely receptive, but also inventive. The curiosity of children finds its first and perhaps strongest expression in the restless movements of their hand. The desire to palpate, lift,

or press objects nurtures in them an attitude of "let's see what happens or how it unfolds," essential for all subsequent artistic and scientific endeavours.

For all those who attempt to kindle the innovative spirit of youth by the acquisition and improvement of computer literacy, I would recommend the writings of painters and sculptors. They present some convincing views about the dynamics of creativity and, by doing so, they make us realize that the "decay of innovation" can be prevented, or reversed, by cultivating what is the closest to us: our hand.