

**THE ESTHETICS OF
MOTION, WITH SPECIAL
REFERENCE TO THE
PSYCHOLOGY OF GRACE**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649275212

The Esthetics of Motion, with Special Reference to the Psychology of Grace by George H. Browne

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Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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The

ESTHETICS OF MOTION

WITH SPECIAL REFERENCE TO THE

Psychology of Grace

INCLUDING A TRANSLATION OF CHAP. I, PART III, OF
SOURIAU'S L'ESTHETIQUE DU MOUVEMENT
WITH OCCASIONAL COMMENT BY

Presented by

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New Uls, Minn.
The Turner Publishing Co.
1917

THE ESTHETICS OF MOTION

WITH SPECIAL REFERENCE TO

THE PSYCHOLOGY OF GRACE

A Translation of Chapter I of Part III of Souriau's *L'Esthétique du Mouvement*
with Occasional Comment.

I am frequently called upon to serve on the board of judges at American and Canadian figure-skating competitions. The present regulations of the International Skating Union compel judges to allot a certain proportion of the marks to the grace of the contestants. Now, on matters of technique—such as accuracy and control of edge, size and placing of figures, difficulty, variety, and composition of program, rhythm and time in execution (unison and harmony, of pairs), etc.—the accepted international standards of today render not difficult reasonably consistent apportionment of marks by judges who are competent and impartial; but grace, tho' easily recognized, has been the most difficult of all artistic elements to analyze and differentiate numerically. To discover principles and criterions of judgement here, I have of late taken pains to consult the experimental and physiological psychologists, on one hand, and the most expert performers in different branches of physical self-expression, on the other,—withal pursuing, at times, the literature of the subject—not wholly without results.

In the philosophical library at Harvard, last spring, I stumbled upon an interesting book on the esthetics of motion that nobody in the psychological department had apparently ever read, tho' written nearly thirty years ago—perhaps just because written thirty years ago! American skaters might well suspect the competency of the author, who confessed that he “had never seen skating on one foot, and understood that the feat was thought to be impossible”—and that, twenty five years after an American skater, in disgust at the excess of mere difficult acrobatics on one foot in the skating of his day, had taken his more artistic style to Europe—now become the International style—and that, too, only the year before the organization of the International Skating Union, which included among the six fundamental figures in its prescribed schedule the serpentine *on one foot!* Yet the clever

French psychologist proceeded to prove, according to his method, that skating on one foot was possible: "It would amount to a series of jumps sidewise, linked together by a continuous glide. The difficulty would be not to acquire momentum but, once acquired, to regain equilibrium. Theoretically, there is nothing impracticable in it—for skaters accomplished enough to try it!" (p. 108.) The very year he published this, I was one of the judges in the first New England championship, which J. F. Bacon won over the late Herbert S. Evans—both subsequently American champions—and the skating was mostly continuous on one foot! Souriau might have seen at the New York Skating Club, in the early sixties, Theodore H. Rodgers skate 133 continuous eights on one foot, and then immediately skate 95 more on the other; and at the Vienna Club, in the early seventies, Max Kautz skate 720 eights on one foot without stopping! But he would have seen little grace in any of it. He could not have seen a flying-machine; but the problem of making one seemed to him to present no insurmountable difficulties, not even great ones; his analysis of aerial locomotion convinced him that the plane, with skilful balancing, not with complicated machinery or flapping wings, would soon solve the problem; but he had no intimations of the possibilities of the gasoline engine. Souriau knew not "Kines-thesis" or "Empathy," as such; but his appreciation of "muscular synergy" (pp. 88 ff.)—the integration of co-operative movements—and of "objectified emotions" (p. 163) makes him a kind of Wallace to the Darwins of the esthetic psychology of today. Vernon Lee quotes him approvingly; and his scientific method deserves respectful consideration.

"Even if common experience," he says, "enables us to get along in a passable manner with the ordinary movements of locomotion, abstract reasoning, calculation, theory, are by no means ineffective when we come to the acquired movements of sport and physical training, which form what may be called, in the esthetics of motion, the grand art. Teachers of physical training, riding, fencing, skating, swimming, etc., who know physiology, physics, and mechanics will give their pupils a better method; and if they know how to explain the why of the movements they would have their pupils make, they will secure much more rapid progress."

"The psychological analysis of the movements in locomotion has an interest both practical and theoretical: it may serve us in perfecting the art of locomotion, and it may serve also in providing us a solid basis for our judgements on the beauty of motion. The problems of the esthetics of motion can be solved in a scientific manner. Surely grace is a most charming quality. But isn't it more or less relative? Often quite illusory? How are we to judge it? By the vague feeling of sympathy which the apparent ease of movements rouses in us; by instinctive predilections of taste which, it is said with good reason, there is no use discussing when there are no common principles which can furnish the discussion with a solid point of departure? But in judging of the

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beauty of a movement; *i. e.*, of its propriety, of its fitness to the end in view, I can surely reason on principles. When I say 'that's a well-executed movement, that's an awkward gesture,' I assert a truth as objective, as independent of my tastes and of my personal sentiments, as when I report the precise details of an experiment in physics, or detect in a problem in arithmetic a mistake in calculation.

"All critics who have concerned themselves with the esthetics of motion agree in declaring that the most beautiful movements are those in which force is best employed. For a specific example, they will add: 'A graceful skater is one whose movements are best adapted to skating without impairing his acquired speed.' Undoubtedly. But if I skate, what I should like above all else to know is, what positions will give me the best balance, and what movements will give me the greatest speed. If I observe a skater moving awkwardly over the ice, you may tell me that he is using his force inefficiently, and I shall not have the slightest disposition to dispute you; but to clear my judgement, to improve my taste, you must tell me wherein he violates the laws of physics; and if he carries his free-foot in a bad position, how he ought to carry it. If we can't get together here, general principles are no good—mere hot-air phrases. Let us try to apply our principles to the facts. At least, my method has this advantage: if I make a mistake, you will easily detect me."

The author handles many familiar principles and well-known facts in a fresh and frank fashion. He divides his work into four parts: I. The Determination of Movement; II. The Exact Adaptation of Movement to the Desired End; III. The Expression of Movement; IV. The Perception of Movement. I am reproducing only the first chapter of the third part; but to render that more easily intelligible, in relation to the whole, I am giving first a brief summary of the preceding matter, almost entirely in the author's own words, but much condensed.

"BEAUTY is a thing so complex that it is impossible to determine the nature of it *a priori*. Esthetics can never become a science until the processes of the experimental method are applied to it. Can not our judgements in the matter of taste, usually abandoned to the caprices of sentiment, be based on more reliable principles? Can not this art, inferior still because wholly empirical, be given a scientific method? In studying the subject anew, I have tried to discover what can be got out of it, in a spirit less literary than scientific."

PART I. THE DETERMINATION OF MOVEMENT. (pp.9-70)

"In the first part, I study the determination of movement; *i. e.*, the physical or psychic laws by virtue of which we have a tendency to move in one way rather than another. It is evident that this is the first question that ought to interest us... Before judging Nature, above all, before pretending to correct her, it is necessary to learn how to know her. I conceive, then, that our

whole esthetic ought to rest on a knowledge of the movements that are most natural to us.

It is clear that the movements that an animal makes are determined above all by its organic structure... But anatomy indicates to us only the field of our activity; *i. e.*, the different kinds of movement that we can make; it fails to explain to us the play of life; for a being who feels, who thinks, who wills, does not obey a simple mechanical determination. A mechanic has only to take a machine to pieces to tell what kinds of movement it is capable of; with an animal, it is different—the mechanical determination is complicated with a psychological determination, which is perhaps as rigorous as the other, but surely is much more delicate and of another order altogether. It is with this that we shall chiefly concern ourselves.

The pleasure of movement is both physical and moral. Physically, movement serves us in reacting against pain and in satisfying natural needs. Movement is the best of anesthetics... When we have staid too long inactive, how do we feel? Above all, we feel

CHAP. I.
THE PLEASURE
OF
MOVEMENT

an irresistible desire to move. Like all our appetites, the need of moving, before even any sensation can make us aware of it, manifests itself in the effect which it produces on our imagination. We find a typical example of this "suffrance of enforced repose" in the school-boy waiting for the end of school. His back feels broken, his legs are stiff. Whenever will the bell ring? He feels an almost insane desire, increasing every minute, to jump out of his seat, to yell, to gambol. He wriggles. He drags his feet along the floor. A severe look from the teacher rivets him to his place. He remains quiet. But what torture!

Motion can give us also a positive physical pleasure. Rapid and noisy movements produce even a sort of intoxication and giddiness that have a peculiar charm... All rapid motions are apt to take away our complete self-possession. We follow our impulse. "It's foolish, perhaps; very well, let's be foolish and unreasonable for once. Louder, higher, faster! The devil take the consequences!" What is this if not exactly intoxication?

To this pleasure, wholly physical, made up of pure sensation, there is added a moral pleasure—the pleasure of sentiment, notably of self-satisfaction, especially in competitive sports and games, and in our struggles against nature. Of all the forces of nature that man regards as hostile and takes pleasure in overcoming, the one that inspires the greatest antipathy, and against which in all his exercises he struggles with most determination, is the force of gravity. The great pleasure in all movements that take us in rapid (horizontal) transit, is in the freeing ourselves for the time being from our feeling of inertia. In this emancipation our gratification consists when riding in a carriage [or automobile], on horseback, on a cycle, in jumping from a spring-board,

or in vaulting. In our contest with gravity, a fall is defeat; equilibrium is only our defensive; the motion of simple progression is the beginning of freedom; ascension into the air is triumph. Architects take their greatest pride in attaining the highest elevations possible, explorers in planting their feet on the highest summits, aeronauts in mounting highest into the ether. [What would Souriau have said of 125 miles an hour in an automobile, and a real aeroplane battle 10,000 feet above the earth?]

To execute any movement whatever, we must make some effort. Objectively, this effort consists in a certain expenditure of energy; subjectively, it manifests itself to our consciousness by specific sensations—tactile, muscular, cerebral (will, imagination, nerve)—always more or less fatiguing; the more so, the greater the expenditure of energy. The most agreeable movements, however, are not those that cost us the least, but those that give us the most profitable return at the least expense. The law of least effort is one of the greatest stimulants of our activity; in determining our movements, it certainly plays the leading role.

CHAP. II.
THE
DISCOMFORT
OF
MOTION

It is easiest to study the laws of movement in the attitudes in which we place our bodies. The attitude which demands absolutely the least effort is that which our limbs assume spontaneously when abandoned to themselves. This primary position, in which the muscles are only half contracted (*the law of average flexions*) is the attitude of relaxation or repose. If we were concerned only with rendering our attitudes as easy as possible, they would all tend to the attitude of least effort, in which each of our members would find itself in its primary position. As a matter of fact, they adapt themselves to the particular action for which we are preparing ourselves. When the attitude is adapted to a specific action, we strive to give it the greatest ease compatible with this object. Therefore, (1) we multiply as far as possible the points of support (*the law of stability*)—in every attitude that is the least prolonged, our body tends to take the position which assures it the most stable equilibrium with the least effort; (2) we apportion our efforts unequally between homologous muscles (*the law of asymmetry*)—if one leg is stiff, the other is bent, etc.; (3) we make our muscles act in turn (*the law of alternation*)—to keep one position very long, it is advantageous to alternate between two dissimilar positions, which, putting different muscles in play, allow each of them to contract in one position and relax in the other; for a muscle is tired more by a slight contraction long kept up than by a vigorous contraction followed by a complete relaxation. Alternation of attitudes is a direct consequence of their asymmetry.

CHAP. III.
THE LAWS
OF
ATTITUDE

Rhythm, exceptional in nature, is the constant law of muscular movements. The tendency to periodicity, however, is not an effort of will; it is due to physiological causes:

CHAP. IV.
THE NATURAL
RHYTHM
OF
MOVEMENTS

(1) *the law of compensation*—every extreme stimulation will be followed by a period of inaction, which, in its turn, will give way to a new fit of activity; (2) *the tendency to repetition*—cf. the extra clips of the barber's scissors, or the blacksmith's supplementary blows on the bare anvil; it is difficult to break suddenly a rhythmic movement which has begun to be mechanical—by virtue of habit or of the force acquired, you continue to move a little after you have made up your mind to stop; (3) *the effects of habit*—every rhythmic movement becomes automatic, and the more quickly so, the more uniform it is; every rhythmic movement, therefore, for the very reason that it becomes habitual, is executed with greater and greater facility.

In addition to these physiological causes, there are others of a purely mechanical nature. Each of my limbs has its own natural rhythm, the shorter having the faster oscillations. It is an incontestable fact that men of small size have more vivacity in their movements than men of tall stature; and you will always find among animals of the same class that agility increases as size diminishes; *i. e.*, their members, of themselves, tend to assume a certain rhythm proportionate to their size; and this constant cause always ends by regulating the mean vivacity of their natural movements. For these different reasons, each organ of our motor apparatus necessarily has a tendency to adopt a fixt rhythm, which is its normal movement. But these diverse rhythms, whether of circulation, respiration, or locomotion, all have a tendency to complete unification. [The integration by the central nervous system, of innumerable kinesthetic impulses].

PART II. MECHANICAL BEAUTY. (pp. 71-161.)

We are trying to find out how the elementary principles of mechanics can be applied to the art of motion, and enable us to reason about it while directing our examination upon some specific examples. As to the question of art, we shall look for the solution in some problems in gymnastics; as to the question of taste, we shall analyze the principal methods of animal locomotion. The sight of a movement well executed gives us a real esthetic pleasure, quite intellectual, however, and founded on pure concepts; for we do not judge the movement from the effect which it produces on our sensibilities, but for its own worth, appreciated by our reason alone. From this point of view, we shall indicate the applications of our theory that can be made to the art of motion, and we shall analyze critically some of the principal methods of locomotion employed by animals, to give concrete example of esthetic judgements based upon considerations purely physical and mechanical.

CHAP. I.
PRACTICAL
AND
THEORETICAL
INTEREST IN
THIS STUDY