

Humor

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## 13 Herbert Spencer (1820-1903)

In his philosophy Spencer relied heavily on nineteenth-century science, especially biology. His aim was not just to make philosophy more responsive to newly discovered facts, but to incorporate scientific methodology into philosophical thinking. The influence of science of Spencer's thought is best seen in his application of the new theory of evolution to psychology, sociology, ethics, politics, and education. When Spencer looked at the phenomenon of laughter, he was strongly influenced by the current "hydraulic" theory of nervous energy, in which nervous energy builds up within our bodies and requires release through muscular movement. Laughter, in Spencer's view, is a specialized channel of such release. This Relief Theory of laughter was further developed by Freud and it has also influenced many in contemporary psychology, most notably Daniel Berlyne, for whom laughter involves an "arousal jag."

*The Physiology of Laughter, from Essays on Education, Etc.*  
(London: Dent, 1911)

Why do we smile when a child puts on a man's hat? Or what induces us to laugh on reading that the corpulent Gibbon was unable to rise from his knees after making a tender declaration? The usual reply to such questions is, that laughter results from a perception of incongruity. Even were there not, on this reply, the obvious criticism that laughter often occurs from extreme pleasure or from mere vivacity, there would still remain the real problem: How comes a sense of the incongruous to be followed by these peculiar bodily actions? Some have alleged that laughter is due to the pleasure of a relative self-elevation, which we feel on seeing the humiliation of others. But this theory, whatever portion of truth it may contain, is, in the first place, open to the fatal objection that there are various humiliations to others which produce in us anything but laughter; and, in the second place, it does not apply to the many instances in which no one's dignity is implicated: as when we laugh at a good pun. Moreover, like the other, it is merely a generalization of certain conditions to laughter; and not an explanation of the odd movements which occur under these conditions. Why, when greatly

delighted, or impressed with certain unexpected contrasts of ideas, should there be a contraction of particular facial muscles and particular muscles of the chest and abdomen? Such answer to this question as may be possible, can be rendered only by physiology.

Every child has made the attempt to hold the foot still while it is tickled, and has failed; and there is scarcely anyone who has not vainly tried to avoid winking when a hand has been suddenly passed before the eyes. These examples of muscular movements which occur independently of the will, or in spite of it, illustrate what physiologists call reflex action; as likewise do sneezing and coughing. To this class of cases, in which involuntary motions are accompanied by sensations, has to be added another class of cases, in which involuntary motions are unaccompanied by sensations: instance the pulsations of the heart; the contractions of the stomach during digestion. Further, the majority of seemingly voluntary acts in such creatures as insects, worms, molluscs, are considered by physiologists to be as purely automatic as is the dilation or closure of the iris under variations in the quantity of light; and similarly exemplify the law, that an impression on the end of an afferent nerve is conveyed to some ganglionic center, and is thence usually reflected along an efferent nerve to one or more muscles which it causes to contract.

In a modified form this principle holds with voluntary acts. Nervous excitation always *tends* to beget muscular motion; and when it rises to a certain intensity always does beget it. Not only in reflex actions, whether with or without sensation, do we see that special nerves, when raised to states of tension, discharge themselves on special muscles with which they are indirectly connected; but those external actions through which we read the feelings of others, show us that, under any considerable tension, the nervous system in general discharges itself on the muscular system in general: either with or without the guidance of the will. The shivering produced by cold implies irregular muscular contractions, which, though at first only partly involuntary, become, when the cold is extreme, almost wholly involuntary. When you have severely burnt your finger it is very difficult to preserve a dignified composure: contortion of face, or movement of limb, is pretty sure to follow. If a man receives good news with neither facial change nor bodily motion, it is inferred that he is not much pleased, or that he has extraordinary self-control: either inference implying that joy almost universally produces con-

traction of the muscles, and so, alters the expression, or attitude, or both. And when we hear of the feats of strength which men have performed when their lives were at stake — when we read how, in the energy of despair, even paralyzed patients have regained for a time the use of their limbs; we see still more clearly the relation between nervous and muscular excitements. It becomes manifest both that emotions and sensations tend to generate bodily movements, and that the movements are violent in proportion as the emotions or sensations are intense.

This, however, is not the sole direction in which nervous excitement expends itself. Viscera as well as muscles may receive the discharge. That the heart and blood vessels (which, indeed, being all contractile, may in a restricted sense be classed with the muscular system) are quickly affected by pleasures and pains, we have daily proved to us. Every sensation of any acuteness accelerates the pulse; and how sensitive the heart is to emotions, is testified by the familiar expressions which use heart and feeling as convertible terms. Similarly with the digestive organs. Without detailing the various ways in which these may be influenced by our mental states, it suffices to mention the marked benefits derived by dyspeptics, as well as other invalids, from cheerful society, welcome news, change of scene, to show how pleasurable feeling stimulates the viscera in general into greater activity.

There is still another direction in which any excited portion of the nervous system may discharge itself; and a direction in which it usually does discharge itself when the excitement is not strong. It may pass on the stimulus to some other portion of the nervous system. This is what occurs in quiet thinking and feeling. The successive states which constitute consciousness, result from this. Sensations excite ideas and emotions; these in their turns arouse other ideas and emotions; and so on continuously. That is to say, the tension existing in particular nerve centers, or groups of nerve centers, when they yield us certain sensations, ideas, or emotions, generates an equivalent tension in some other nervous structures, with which there is a connection: the flow of energy passing on, the one idea or feeling dies in producing the next.

Thus, then, while we are totally unable to comprehend how the excitement of certain nerve centers should generate feeling; while, in the production of consciousness by physical agents acting on physical structures, we come to a mystery never to be solved; it is yet

quite possible for us to know by observation what are the successive forms which this mystery may take. We see that there are three channels along which nerve centers in a state of tension may discharge themselves; or rather, I should say, three classes of channels. They may pass on the excitement to other nerve centers that have no direct connections with the bodily members, and may so cause other feelings and ideas; or they may pass on the excitement to one or more motor nerves, and so cause muscular contractions; or they may pass on the excitement to nerves which supply the viscera, and may so stimulate one or more of these.

For simplicity's sake I have described these as alternative routes, one or other of which any current of nerve force must take; thereby, as it may be thought, implying that such current will be exclusively confined to some one of them. But this is by no means the case. Rarely, if ever, does it happen that a state of nervous tension, present to consciousness as a feeling, expends itself in one direction only. Very generally it may be observed to expend itself in two; and it is probable that the discharge is never absolutely absent from any one of the three. There is, however, variety in the *proportions* in which the discharge is divided among these different channels under different circumstances. In a man whose fear impels him to run, the mental tension generated is only in part transformed into a muscular stimulus: there is a surplus which causes a rapid current of ideas. An agreeable state of feeling produced, say by praise, is not wholly used up in arousing the succeeding phase of the feeling and the new ideas appropriate to it; but a certain portion overflows into the visceral nervous system, increasing the action of the heart and facilitating digestion. And here we come upon a class of considerations and facts which open the way to a solution of our special problem.

For, starting with the truth that at any moment the existing quantity of liberated nerve force which in an inscrutable way produces in us the state we call feeling, *must* expend itself in some direction, it follows that, if of the several channels it may take, one is wholly or partially closed, more must be taken by the others; or that if two are closed, the discharge along the remaining one must be more intense; and that, conversely, should anything determine an unusual efflux in one direction, there will be a diminished efflux in other directions.

Daily experience illustrates these conclusions. It is commonly remarked that the suppression of external signs of feeling, makes feeling more intense. The deepest grief is silent grief. Why? Because the nervous excitement not discharged in muscular action, discharges itself in other nervous excitements—arouses more numerous and more remote associations of melancholy ideas, and so increases the mass of feelings. People who conceal their anger are habitually found to be more revengeful than those who explode in loud speech and vehement action. Why? Because, as before, the emotion is reflected back, accumulates, and intensifies. Similarly, men who, as proved by their powers of representation, have the keenest appreciation of the comic, are usually able to do and say the most ludicrous things with perfect gravity.

On the other hand, all are familiar with the truth that bodily activity deadens emotion. Under great irritation we get relief by walking about rapidly. Extreme effort in the bootless attempt to achieve a desired end, greatly diminishes the intensity of the desire. Those who are forced to exert themselves after misfortunes, do not suffer nearly so much as those who remain quiescent. If any one wishes to check intellectual excitement, he cannot choose a more efficient method than running till he is exhausted. Moreover, these cases, in which the production of feeling and thought is hindered by determining the nervous energy towards bodily movements, have their counterparts in the cases in which bodily movements are hindered by extra absorption of nervous energy in sudden thoughts and feelings. If, when walking, there flashes on you an idea that creates great surprise, hope, or alarm, you stop; or if sitting cross-legged, swinging your pendent foot, the movement is at once arrested. From the viscera, too, intense mental action abstracts energy. Joy, disappointment, anxiety, or any moral perturbation rising to a great height, destroys appetite; or, if food has been taken, arrests digestion; and even a purely intellectual activity, when extreme, does the like.

Facts, then, bear out these *a priori* inferences, that the nervous excitement at any moment present to consciousness as feeling, must expend itself in some way or other: that of the three classes of channels open to it, it must take one, two, or more, according to circumstances; that the closure or obstruction of one, must increase the discharge through the others; and, conversely, that if, to answer

some demand, the efflux of nervous energy in one direction is unusually great, there must be a corresponding decrease of the efflux in other directions. Setting out from these premises, let us now see what interpretation is to be put on the phenomena of laughter.

That laughter is a form of muscular excitement, and so illustrates the general law that feeling passing a certain pitch habitually vents itself in bodily action, scarcely needs pointing out. It perhaps needs pointing out, however, that strong feeling of almost any kind produces this result. It is not a sense of the ludicrous, only, which does it; nor are the various forms of joyous emotion the sole additional causes. We have, besides, the sardonic laughter and the hysterical laughter which result from mental distress; to which must be added certain sensations, as tickling, and, according to Mr. Bain, cold, and some kinds of acute pain.

Strong feeling, mental or physical, being, then, the general cause of laughter, we have to note that the muscular actions constituting it are distinguished from most others by this, that they are purposeless. In general, bodily motions that are prompted by feelings are directed to special ends; as when we try to escape a danger, or struggle to secure a gratification. But the movements of chest and limbs which we make when laughing have no object. And now remark that these quasi-convulsive contractions of the muscles, having no object, but being results of an uncontrolled discharge of energy, we may see whence arise their special characters—how it happens that certain classes of muscles are affected first, and then certain other classes. For an overflow of nerve force undirected by any motive, will manifestly take first the most habitual routes; and if these do not suffice, will next overflow into the less habitual ones. Well, it is through the organs of speech that feeling passes into movement with the greatest frequency. The jaws, tongue, and lips are used not only to express strong irritation or gratification, but that very moderate flow of mental energy which accompanies ordinary conversation, finds its chief vent through this channel. Hence it happens that certain muscles round the mouth, small and easy to move, are the first to contract under pleasurable emotion. The class of muscles which, next after those of articulation, are most constantly set in action (or extra action, let us say) by feelings of all kinds, are those of respiration. Under pleasurable or painful sensations we breathe more rapidly: possibly as a consequence of the increased demand for oxygenated blood. The sensations that accompany exer-

tion also bring on hard breathing; which here more evidently responds to the physiological needs. And emotions, too, agreeable and disagreeable, both, at first, excite respiration; though the last subsequently depress it. That is to say, of the bodily muscles, the respiratory are more constantly implicated than any others in those various acts which our feelings impel us to; and, hence, when there occurs an undirected discharge of nervous energy into the muscular system, it happens that, if the quantity be considerable, it convulses not only certain of the articulatory and vocal muscles, but also those which expel air from the lungs. Should the feeling to be expended be still greater in amount—too great to find vent in these classes of muscles—another class comes into play. The upper limbs are set in motion. Children frequently clap their hands in glee; by some adults the hands are rubbed together; and others, under still greater intensity of delight, slap their knees and sway their bodies backwards and forwards. Last of all, when the other channels for the escape of the surplus nerve force have been filled to overflowing, a yet further and less used group of muscles is spasmodically affected: the head is thrown back and the spine bent inwards—there is a slight degree of what medical men call *opisthotonos*. Thus, then, without contending that the phenomena of laughter in all their details are to be so accounted for, we see that in their *ensemble* they conform to these general principles: that feeling excites to muscular action; that when the muscular action is unguided by a purpose the muscles first affected are those which feeling most habitually stimulates; and that as the feeling to be expended increases in quantity it excites an increasing number of muscles, in a succession determined by the relative frequency with which they respond to the regulated dictates of feeling. To which as a qualifying and complicating factor must be added the relative sizes of the muscles; since, other things equal, the smaller muscles will be moved more readily than the larger.

There still, however, remains the question with which we set out. The explanation here given applies only to the laughter produced by acute pleasure or pain: it does not apply to the laughter which follows certain perceptions of incongruity. It is an insufficient explanation that in these cases, laughter is a result of the pleasure we take in escaping from the restraint of grave feelings. That this is a part-cause is true. Doubtless very often, as Mr. Bain says, "it is the coerced form of seriousness and solemnity without the reality that gives us that stiff position from which a contact with triviality or

vulgarity relieves us, to our uproarious delight." And insofar as mirth is caused by the gush of agreeable feeling which follows the cessation of unpleasant mental strain, it further illustrates the general principle above set forth. But no explanation is thus afforded of the mirth which ensues when the short silence between the *andante* and *allegro* in one of Beethoven's symphonies, is broken by a loud sneeze. In this, and a host of like cases, the mental tension is not coerced by spontaneous, not disagreeable but agreeable; and the coming impressions to which attention is directed, promise a gratification which few, if any, desire to escape. Hence, when the unlucky sneeze occurs, it cannot be that the laughter of the audience is due simply to the release from an irksome attitude of mind: some other cause must be sought.

This cause we shall arrive at by carrying our analysis a step further. We have but to consider the quantity of feeling which exists under such circumstances, and then to ask what are the conditions determining the direction of its discharge, to reach a solution. Take a case. You are sitting in a theatre, absorbed in the progress of an interesting drama. Some climax has been reached which has aroused your sympathies—say, a reconciliation between the hero and heroine, after long and painful misunderstanding. The feelings excited by this scene are not of a kind from which you seek relief; but are, on the contrary, a grateful relief from the painful feelings with which you have witnessed the previous estrangement. Moreover, the sentiments these fictitious personages have for the moment inspired you with, are not such as would lead you to rejoice in any indignity offered to them; but rather, such as would make you resent the indignity. And now, while you are contemplating the reconciliation with a pleasurable sympathy, there appears from behind the scenes a tame kid, which, having stared round at the audience, walks up to the lovers and sniffs at them. You cannot help joining in the roar which greets this *contretemps*. Inexplicable as is this irresistible burst on the hypothesis of a pleasure in escaping from mental restraint; or on the hypothesis of a pleasure from relative increase of self-importance, when witnessing the humiliation of others; it is readily explicable if we consider what, in such a case, must become of the feeling that existed at the moment the incongruity arose. A large mass of emotion had been produced; or, to speak in physiological language, a large portion of the nervous system was in

a state of tension. There was also great expectation with respect to the further evolution of the scene—a quantity of vague, nascent thought and emotion, into which the existing quantity of thought and emotion was about to pass. Had there been no interruption, the body of new ideas and feelings next excited, would have sufficed to absorb the whole of the liberated nervous energy. But now, this large amount of nervous energy, instead of being allowed to expend itself in producing an equivalent amount of the new thoughts and emotions which were nascent, is suddenly checked in its flow. The channels along which the discharge was about to take place, are closed. The new channel opened—that afforded by the appearance and proceedings of the kid—is a small one; the ideas and feelings suggested are not numerous and massive enough to carry off the nervous energy to be expended. The excess must therefore discharge itself in some other direction; and in the way already explained, there results an efflux through the motor nerves to various classes of the muscles, producing the half-convulsive actions we term laughter.

This explanation is in harmony with the fact that when, among several persons who witness the same ludicrous occurrence, there are some who do not laugh, it is because there has arisen in them an emotion not participated in by the rest, and which is sufficiently massive to absorb all the nascent excitement. Among the spectators of an awkward tumble, those who preserve their gravity are those in whom there is excited a degree of sympathy with the sufferer, sufficiently great to serve as an outlet for the feeling which the occurrence had turned out of its previous course. Sometimes anger carries off the arrested current; and so prevents laughter. An instance of this was lately furnished me by a friend who had been witnessing the feats at Franconi's. A tremendous leap had just been made by an acrobat over a number of horses. The clown, seemingly envious of this success, made ostentatious preparation for doing the like; and then, taking the preliminary run with immense energy, stopped short on reaching the first horse, and pretended to wipe some dust from its haunches. In most of the spectators, merriment was excited; but in my friend, wound up by the expectation of the coming leap to a state of great nervous tension, the effect of the balk was to produce indignation. Experience thus proves what the theory implies, namely, that the discharge of arrested feelings into the muscular system

takes place only in the absence of other adequate channels, does not take place if there arise other feelings equal in amount to those arrested.

Evidence still more conclusive is at hand. If we contrast the incongruities which produce laughter with those which do not, we see that in the non-ludicrous ones the unexpected feeling aroused, though wholly different in kind, is not less in quantity or intensity. Among incongruities which may excite anything but a laugh, Mr. Bain instances "A decrepit man under a heavy burden, five loaves and two fishes among a multitude, and all unfitness and gross disproportion; an instrument out of tune, a fly in ointment, snow in May, Archimedes studying geometry in a siege, and all discordant things; a wolf in sheep's clothing, a breach of bargain, and falsehood in general; the multitude taking the law in their own hands, and everything of the nature of disorder; a corpse at a feast, parental cruelty, filial ingratitude, and whatever is unnatural; the entire catalogue of the vanities given by Solomon, are all incongruous, but they cause feelings of pain, anger, sadness, loathing, rather than mirth." Now in these cases, where the totally unlike state of consciousness suddenly produced is not inferior in mass to the preceding one, the conditions to laughter are not fulfilled. As above shown, laughter naturally results only when consciousness is unawares transferred from great things to small—only when there is what we may call a *descending* incongruity.

And now observe, finally, the fact, alike inferable *a priori* and illustrated in experience, that an *ascending* incongruity not only fails to cause laughter, but works on the muscular system an effect of the reverse kind. When after something very insignificant there arises without anticipation something very great, the emotion we call wonder results; and this emotion is accompanied not by contraction of the muscles, but by relaxation of them. In children and country people, that falling of the jaw which occurs on witnessing an imposing and unexpected change, exemplifies this effect. Persons wonder-struck at the production of a striking result by a seemingly inadequate cause, are frequently described as unconsciously dropping the things they held in their hands. Such are just the effects to be anticipated. After an average state of consciousness, absorbing but a small quantity of nervous energy, is aroused without notice, a strong emotion of awe, terror, or admiration; joined with the astonishment due to an apparent want of adequate causation. This

new state of consciousness demands far more nervous energy than that which it has suddenly replaced; and this increased absorption of nervous energy in mental changes, involves a temporary diminution of the outflow in other directions: whence the pendent jaw and the relaxing grasp.

One further observation is worth making. Among the several sets of channels into which surplus feeling might be discharged, was named the nervous system of the viscera. The sudden overflow of an arrested mental excitement, which, as we have seen, results from a descending incongruity, must doubtless stimulate not only the muscular system, as we see it does, but also the internal organs: the heart and stomach must come in for a share of the discharge. And thus there seems to be a good physiological basis for the popular notion that mirth-creating excitement facilitates digestion.

Though, in doing so, I go beyond the boundaries of the immediate topic, I may fitly point out that the method of inquiry here followed, opens the way to interpretation of various phenomena besides those of laughter. To show the importance of pursuing it, I will indicate the explanation it furnishes of another familiar class of facts.

All know how generally a large amount of emotion disturbs the action of the intellect, and interferes with the power of expression. A speech delivered with great facility to tables and chairs, is by no means so easily delivered to an audience. Every schoolboy can testify that his trepidation, when standing before a master, has often disabled him from repeating a lesson which he had duly learnt. In explanation of this we commonly say that the attention is distracted, that the proper train of ideas is broken by the intrusion of ideas that are irrelevant. But the question is, in what manner does unusual emotion produce this effect; and we are here supplied with a tolerably obvious answer. The repetition of a lesson, or set speech previously thought out, implies the flow of a very moderate amount of nervous excitement through a comparatively narrow channel. The thing to be done is simply to call up in succession certain previously-arranged ideas—a process in which no great amount of mental energy is expended. Hence, when there is a large quantity of emotion, which must be discharged in some direction or other; and when, as usually happens, the restricted series of intellectual actions to be gone through, does not suffice to carry it off; there result discharges along other channels besides the one prescribed: there

are aroused various ideas foreign to the train of thought to be pursued; and these tend to exclude from consciousness those which should occupy it.

And now observe the meaning of those bodily actions spontaneously set up under these circumstances. The schoolboy saying his lesson, commonly has his fingers actively engaged, perhaps in twisting about a broken pen, or perhaps in squeezing the angle of his jacket; and if told to keep his hands still, he soon again falls into the same or a similar trick. Many anecdotes are current of public speakers having incurable automatic actions of this class: barristers who perpetually wound and unwound pieces of tape; members of parliament ever putting on and taking off their spectacles. So long as such movements are unconscious, they facilitate the mental actions. At least this seems a fair inference from the fact that confusion frequently results from putting a stop to them: witness the case narrated by Sir Walter Scott of his school-fellow, who became unable to say his lesson after the removal of the waistcoat button which he habitually fingered while in class. But why do they facilitate the mental actions? Clearly because they draw off a portion of the surplus nervous excitement. If, as above explained, the quantity of mental energy generated is greater than can find vent along the narrow channel of thought that is open to it; and if, in consequence, it is apt to produce confusion by rushing into other channels of thought; then, by allowing it an exit through the motor nerves into the muscular system, the pressure is diminished, and irrelevant ideas are less likely to intrude on consciousness.

This further illustration will, I think, justify the position that something may be achieved by pursuing in other cases this kind of psychological inquiry. A complete explanation of the phenomena requires us to trace out *all* the consequences of any given state of consciousness; and we cannot do this without studying the effects, bodily and mental, as varying in quantity at one another's expense. We should probably learn much if in every case we asked: Where is all the nervous energy gone?