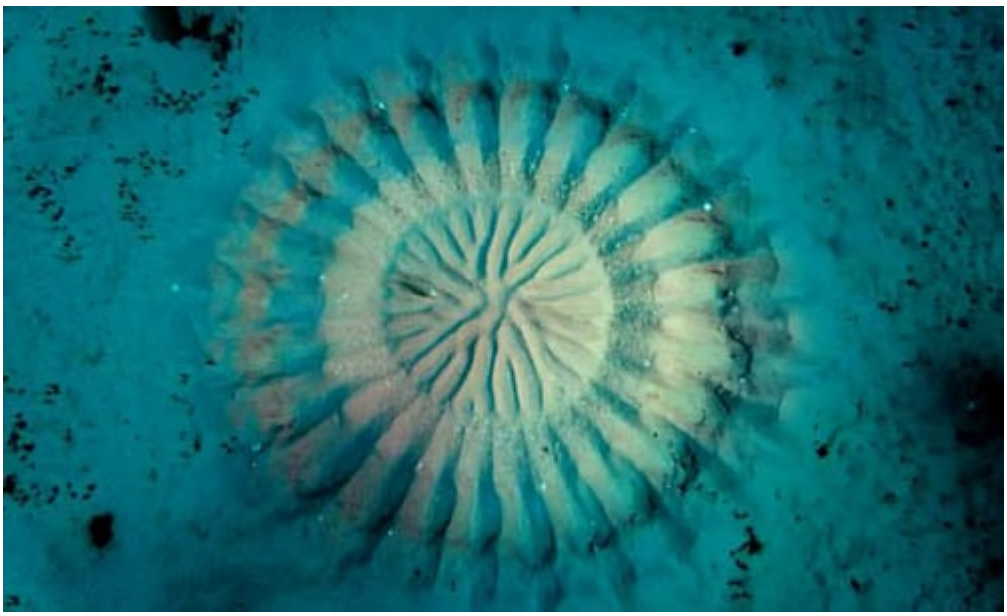
Fish and Birds in Aesthetic Play

The Puffer Fish, Manakin Birds and Palm Cockatoos: Nature's Aesthetic Animals

by Norman Simms (January 2018)



The male puffer fish[1] seems to have some sort of aesthetic sense (a non-practical measure of pleasurable sensations) that is not easily and simplistically equated with genetics or hard-wiring but rather a more playful expression and response to its environment, and its desire for a mate. In this way he thus requires and acquires a sensitive and appreciative audience. But it is not enough to say that the creating of the circles is a mating ritual to arouse and entice the female puffer fish to accept the male's desire to copulate; nor to reduce pleasure they both seem to take in the carefully constructed circles, made of refined sand, constantly cleaned grooves, and general guardianship of the area in which eggs will be laid and fertilized by the pair. There seems to be something more in play than show-off

gestures as sexual attraction. Whereas Darwin distinguished between the survival features that enhanced the likelihood of individual members of the species to achieve maturity and pass on its germ plasma to subsequent generations and the sexual features that aroused, attracted and ensured copulatory acts, as well as those characteristics that ensured protection, care and nurturing of offspring, so we must insert the idea—whatever we may choose to call it, pleasure principle, risk aversion, sensory pleasures—that for some creatures at least there is also a manifest appreciation of form, design, completeness of design, satisfaction with the attraction and admiration of others. But does this involve consciousness or self-consciousness, let alone forethought or any thought at all? Are these aesthetic creatures?

Not all the one hundred and twenty members of the puffer fish sub-species within the *tetraodontidae* family do this elaborate performance, let alone all deep sea creatures, just as not all spiders spin elaborate webs with formal patterns. Some birds, perhaps a very few, like the manakin bird, exhibit complex and lengthy dances in ways that can only be observed by the use of high-speed cameras—and by appreciative female judges. These creatures seem to turn themselves and portions of their environment into temporary works of art. Yet is this conceptualization of design, form, and performance only in the eyes of the modern human observer or does it have some real presence or correlate in the physiognomy or psychology of the creatures engaged in the making of these shaped experiences, with or without relatively permanent changes to the physical environment?[2]

What these puffer fish, manakin birds, palm cockatoos and other creatures display goes beyond tool-use and tool-making as a defining quality of the human species as *homo faber*. They may also be justifiably included in a category usually restructured to *homo ludens*, man the game-playing animal. The old truism proclaims that mankind uniquely engages in symbolic

thought and hence is able to create a language based on spoken words that does more than name things or signal feelings such as distress, fear or joy, and hence it creates a unique evolutionary place for *homo sapiens*, there is another displacement by the behaviours and the feelings and thoughts that lie behind them with this example of the sculpting puffer fish. This displacement, we suggest—and it is a very speculative suggestion—means there is a place in nature that lies beneath or around the human species where animals play, and out of which or upon which human consciousness, language and art are built. The distinction between human consciousness, language and art and animal consciousness, language and art is not absolute: some fish, some birds, and some other creatures approach in refinement, if not in reflexive self-awareness and the ability to articulate their feelings in ways they can recall, what early human species—Neanderthal and Cro-Magnon—gradually began to perfect as their defining quality as thoughtful and pleasure-enjoying beings.

Let us go back and look again at the details. For a week or ten days the male puffer fish works night and day to clear an area on the seafloor in its home territory, swimming back and forth on the surface with his fins and especially dorsal fin shaping ridges, trenches and curved lines to form something that looks like a flower as a mating and nesting place. In addition to the symmetrical design and the carefully-measured depth of the grooves, the male also decorates the mating

grounds with small shells, objects chosen for their colour and size. Some scientists believe the females watch and judge these final stages of the construction more than others during the week-long ritual.[3] It also indicates that the females of this aquatic species are more than sexually attracted by the finished product as an indication of the male's prowess, persistence and determination. While they are not observed to be constantly swimming nearby and judging the efforts of the male puffer fish, the females often survey a larger area to compare and contrast the shaped space of other would-be fathers to her fry.[4] After the eggs are laid out in the hollowed out grooves of the playground, the male fertilizes them externally, with the pair hovering over the area for six to seven days to protect the brood.

Not only the week-long expenditure of energy by persistent motions performed by the male, shaping and keeping clear of debris or random shells from the love nest, but the completed structure itself is created as a signifying object, something that at once stands out from the surrounding territory as an unnatural feature and, at the same time, something which distinguishes this particular physical conceit from those produced by other males in her immediate experience, memory or creative conceptualization. Though scientific discourse seems to preclude any consideration of intentional creation of a place which gives pleasure to the builder and his potential mate, the evidence seems to suggest that this is precisely what lies behind the phenomena associated with reproduction.

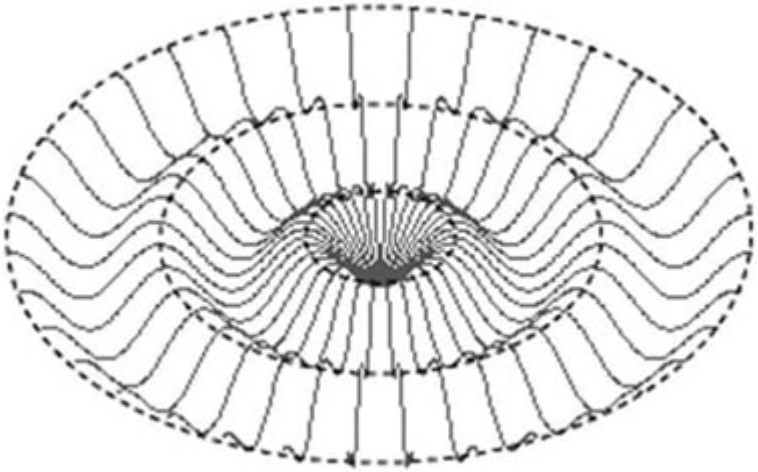
There is something here that puts in question easy solutions. It could throw out of the window our preconceptions about the nature of instinctive play or ritual or even hysterical, obsessive repetition compulsion; as well as the idea of so-called found art in nature, inherited animal consciousness and constructed social and domestic relationships. This uncanny phenomenon also brings up, by extension into the human sphere, the question of whether or not all children grow up, no matter in what time or place, no matter superficially distinct their cultures are, so that they learn to see with the same rule-based logical apparatus of the mind Noam Chomsky argues lies behind the development of language as a basic and defining human quality, something "hard-wired" into the anatomy of the brain or encoded into the genetic structures of the mind. Since all humans share the same basic genetic make-up, and since also as humans we all share a very large proportion of our genetic code with other living things throughout the animal kingdom, then it might not be too far a stretch to see in the puffer fish's architectural achievement or the manakin bird's dance routines something that may tell us important things about our own mind and its aesthetic development. However, there are significant faults with this argument. But first let us look at the similarities between what the puffer fish builds for its love-making and what has been postulated as the "ripple effect" in human perception.

Ripples and Rule-Based Logic in Vision as well as Language

Donald Hoffmann has created an example of our ability to use simplified physics to re-create what we see in a work of art. He calls this paradigm the "ripple". The ripple is a drawing on a flat, two-dimensional surface, but it appears to be undulating in space like waves in a pond.[5]

There is a remarkable similarity between the lines and flowery ridges drawn in the sand by the puffer fish and the

illustration by Donald Hoffman to show how all children come to see the same way, no matter how differently various cultures interpret the significance of those perceptions. Eric Kandel cites Hoffman and makes his own more eloquent argument to relate the neuro-anatomical findings relevant to the history of art, especially German Expressionism in Vienna 1900.



Donald Hoffman's Model of a "Ripple"

Here's where I need to hold back and think through what Hoffman is doing, however—if he comes out with this approval of Chomskian rules of universal grammar: an idealism right out of a Jansenist mentality with Port-Royal thinking, and thus against the dynamics and creative chaos of the real Darwinian world. This is determinism, rule-based logic (the error I think Eric Kandel makes with his over-emphasis on Gestalt psychology) and the epistemological error of teleological, Lamarckian biology—that there are already innate logical paradigms towards which all evolution aims. We have to resist the urge to read back into the animal behaviour a rule-based and goal-orientated programme. At the same time, we need to avoid an easy slide towards anthropomorphism—to see Nature as a theatre of Walt Disney sentimentality or a bourgeois allegory of individual expression as a way of possessing and transforming the environment.

From the perspective I am constructing, we cannot accept that

anyone, let alone any kind of living beast or bird or insect or fish, is mindlessly driven by selfish genes out to reproduce themselves at any cost, even of their own lives. Ask any adolescent whether their hormonal drives are concerned with future generations bearing their somatic code? The biological processes and organs may indeed function as Kandel and his sources claim, but the molecules and tissues were not destined or designed to have that configuration in the human mind. They are not qualities hard-wired into our brains from the very beginning, as though the metaphor of the computer had anything more than temporary heuristic value, no more than long strips of DNA encode thoughts and feelings, reactions to environmental factors only very recently encountered in the world. Evolution occurs at times very much quicker and in more quirky ways than nineteenth-century biologists could image, as well as sporadically in “punctuated” periods of crisis. In fact, just as what counts in making us who we are—be we puffer fish, manakin birds, or human teenagers—is less the particular genes one inherits, than the way the internal and external environment triggers the expression of those factors. The paradigm of evolutionary development, progressive improvements and useful adaptations now seems too old-fashioned and clunky a model to work with, perhaps a mere secularized version of the Fundamentalist’s intelligent design or Newton’s clock-work universe.

We are all born in a neotenic state of incomplete development, having to journey into the real world of our experiences many months too soon and under various, often hostile conditions. In fact, as individuals and as a species, we do much better precisely because we are not firmly fixed (“hard-wired”) into our final state of being but rather enjoy a fluid, flexible and dynamic relationship to the possibilities of change. We thrive—when we are not stricken by disaster, disease, or political catastrophes—by creative chaos, not by rule-based logic, language or image recognition. Yet some cultures and periods are more dysfunctional than others, more susceptible

to negative and nefarious ways of relating to one another and the world around us. This means more than that there are cultures and ways of living quite distinct from our own but which at certain points of contact between them and us disgust us physically and morally by their disregard for the very principles of sanitation and sanity, as well as making it impossible for us to sustain our philosophical, ethical and aesthetic ideals by which we structure out lives, and probably they justly feel the same about us (whomever we happen be). The *other* are not merely or only to be seen as our inferiors or necessary counter-beings in our conceptualization of who we are, and thus fit in some mythical fantasy our forebears have created through history; but they can actually be hostile to us and actively threaten our very well-being, security and existence, as we do theirs: and in fact, they regard our sense of justice, love and beauty as incompatible with their own. Touché!

Manakan Bird

Come to a theatre in the forest and watch. The male manakan birds do strange line dances, zipping back and forth on long twigs, showing off their colours and tricks to an audience of females. Sometimes one or more of the hens gather to observe the performances.[6] In some instances, it is one cock struts his stuff before the jury of females, and in others there is a

whole line-up of males each doing their own thing in front of the critical assembly of hens. After the performance, several minutes pass by while the females of the species make up their minds. In another variation of the mating dance, among manakans in Costa Rica, “males employ a wingman to help them find a mate. To attract females, the pair of rivals perform an elaborate song-and-dance-routine, even though only the more dominant male ever gets to mate.[7] In due course, the assistant bird grows up and takes on the role of dominant performer, the intervening five years providing opportunity for him to learn the choreography and make his own variations. The whole production cannot be explained by saying that it is a way for males to prove their virility and virtuosity and for females to judge the potentialities of the cocks as vigorous breeding stock to father and subsequently protect her chicks. It is doubtful that any creatures gear their lives towards genetic proliferation and survival into future generations. A more immediate purpose for the vigorous dance routine would surely be to self-arouse the mating instinct among the most acrobatic of the males and then to awaken a sexual arousal among the females, both gaining a physiological pleasure in the expenditure of energy and the flow of hormones.

Furthermore, when we look at the example of the palm cockatoo (*Probosciger aterrimus*) of northern Australia, the performing cock, after breaking off and shaping a proper drumstick or seedpod (of approx. 20 cms.), begins to bang on the branch where he stands, with an interested hen joining him,[8] not only watching the way he manufactures the instrument and then listening to his solo drumming, but approving of his rhythm[9] and nodding her head in time to the beat.[10] Some fieldworkers have registered more than 130 separate rhythmic patterns, ranging from twenty-seven to ninety-two beats long.[11] It has been suggested that the birds, the female of which lays only one egg every two years,[12] so that mates must ensure they are strongly attracted to one another and willing to commit to long-term care of their offspring, the

drumming performance being, as it were, the final test of compatibility following the “normal” screeching and whistling that mark the announcement of readiness to copulate and constituting physical foreplay.[13] These half-hour-long drumming sessions go beyond normal dance riffs and feather-ruffling to provide carefully articulated activities and mutual interaction concerned with the performance itself. No other male palm cockatoos were present to observe the performance and only one female at a time attends to the drumming, thus leaving open the question of whether or not young birds learn from their elders in this matter,[14] one thing is clear: this is something more than the blind passion of selfish genes getting together to jam their way to eternal reproduction of themselves.

Palm Cockatoo Pair

How do we account for the pleasure in performance and observation of the skilled performer in these relatively rare instances of animal display? Without trying to impose a self-conscious artistic urge on to our colourfully-feathered or agile finny friends, we do need to consider that non-human animals take some sort of delight in what they do during these lengthy bouts of foreplay and not only in the copulatory act itself, which seems brief enough to have a minimal *raison d’être*. As Heinsohn and his associates put it in regard to the palm cockatoo drumming,

> In particular drumming rates do not appear to be determined by mechanical constraints, such as the limb acting as a pendulum. The swing and thump on the tree trunk is not a suspension from above. Instead, the drumming is more like the action in a human drummer where the trunk is hit from above or the side. This makes a purely mechanical action unlikely because the bird has to lift and release the stick regularly.[15]

Similarly, contrary to mechanical operations or instinctive expectations, the puffer fish can spend a week or more preparing his love-nest arena, clearing and cleansing the grounds, but hardly a moment in the actual consummation of his amatory climax. The female puffer inspects the construction and either approves or rejects his efforts, appreciating in some way his planning and execution as pleasurable in themselves, in some way enjoying vicariously the many hours and days expended on her behalf. She must know what she likes, not only whom she can trust to inseminate her eggs. Or in the other example we are referring to, the manakan chorus line of male dancers not only seek to grab the attention of a probable female partner from the loge in which the hens observe and judge, this testing of one another's skills of dancing but also take pleasure in their own activity. In addition, the very act of discernment by performers and audience lifts the occasion above the instinctual display in analogous species.

What is it that the creatures rehearse and induces their young comrades occasionally to witness and, in some instances, help control the situation on the playground? In other words, what is it that the gathering of the females are comparing between the enthusiastic performers they observe? If not blind instinct or socially-directed constructs, what are these creatures playing at? Something is being learned, perfected and enjoyed for its own sake, enough so, it would seem, to replace a general orgiastic flutter of sexual energy. Few of the fish and birds within the general mating zone of each of

these species takes part in the actual copulation, so that the non-participants must receive something else to compensate for not having their own individual genes passed on. Since they know as little of their genetic constitutions as they do of their evolutionary functions within the great scheme of things, something is created which satisfies both participants and observers alike.

Play is More than a Children's Game and Adult Recreation

Concepts such as symbolic language, volitional consciousness, storage patterns of memory, performative actions and gestures in ritual art and varieties of game-making and play have to be discussed, each of them having various cultural meanings at different times and places, and certainly not fixed in western modern societies. Above all, we need to think of the brain-mind as part of an organic bodily whole—a growing, developing and self-correcting neuronal system, a hormonal process of stimulating emotional and intellectual activities, a dynamic response to the external and internal environment that triggers the expression of genetic potentialities in shorter and long term periods, expressions that are reversible and multi-valent.

Rather than seeing play as the antithesis of work, meaning productive labour, or as distinct from serious and deliberate activities, and thus relegated to children's games which exercise their minds and bodies in preparation for adult roles, we now understand the term in a much wider and deeper series of ways, so much so that one Dutch historian concluded that game-playing was the very essence of what differentiated mankind from all other creatures, Johann Huizinga thus renamed our species *Homo Ludens*, man the game-playing animal.[16] For Huizinga, play is at the heart of religion, civilization, culture, art and industry. As well as formalized human relationships at all levels, from child-parent bonding through all aspects of domestic politics, social structures, as well as religious and intellectual thoughts and institutions. With

the further discussions of a French philosopher, Roger Caillois in his *Man, Play and Games*,[17] the sub-categories could be set forth as variations on free-flowing and even vertiginous activities that lie outside of formal structures and rules through precisely those modes which not only require definite rules and regulations, measured space and time, and which yet may form patterns around the play of chance, fate or fortune; and further just as we watch carefully scripted and rehearsed plays in the theatre concluding in unrepeatable tragic acts or self-effacing comic reductions of apparent tensions and misunderstandings or we may listen to well-regulated expressions of organized emotions in musical concerts when a symphony is played by expert professional performers who at once follow the strict directions of a conductor and express their own artistic insights, we also can enjoy hyper-structured activities in marching bands, circus acrobats and synchronized swimmers. A Wikipedia entry[18] sets forth Caillois's four categories of play:

1. **Agon,** or competition. It's the form of play in which a specific set of skills is put to the test among players (strength, intelligence, memory). The winner is who proves to have mastery of said skill through the game, for example a quiz game is a competition of intelligence, the winner proves that it's more intelligent than the other players. E.g. chess
2. **Alea,** or chance, the opposite of Agon, Caillois describes Alea as "the resignation of will, An abandonment to destiny". If Agon used the skills of players to determinate a victor Alea leaves that to luck, an external agent decides who the victor is. E.g. playing a slot machine
3. **Mimicry,** or mimesis, or role playing Caillois defines it as "When the individual plays to believe, to make himself or others believe that he is different from himself". E.g. playing an online role-playing game
4. **Ilinx** (Greek for "whirlpool"), or vertigo, in the sense

of altering perception by experiencing a strong emotion (panic, fear, ecstasy) the stronger the emotion is, the stronger the sense of excitement and fun becomes. E.g. taking hallucinogens, riding roller coasters, children spinning until they fall down.

It should be evident now that these categories can cover game-playing creatures, including humans, who occasionally require engagement in various form of play. This requires the finding or construction of a play-ground and sometimes to prepare instruments or tools in advance. The play may move from a point of stasis through more or less elaborate activity and then back to stasis or pass on to a newly defined relationship between the players—from neutral actor to favoured mate, for example. The performative game may begin, however, with disorderly or even hostile relations and actions and then achieve a configuration of order, harmony and establishment of future long-term (seasonal or life-time) relationships. Thus the male puffer fish begins a set of actions that separate him normal non-play time and organizes an area as a play-ground into which the female will join him in breeding, insemination and nesting. The manakin birds gather to perform at a set time and to be seen in a fixed space. Their activities, including observation, approval or rejection, re-organize the random relations into nesting pairs and non-reproducing outsiders. Seemingly self-absorbed with his own skilful performance of trimming and using his sticks to drum in a solo performance for his own delight, the male palm cockatoo establishes both time and space for the display—an activity that emerges from the more natural and instinctive gestures and sounds of foreplay and which then slides back into the ruffled and noisy encounter which is mating itself. The female bird may be first drawn to the same time and place by recognition of the preparatory signs of the drumming to follow or, if they have already mated and set up a relationship, now turns her attention to the performance she knows from past experience she will enjoy, an enjoyment, however, that is in addition to

if not separate from the copulatory discharge of sexual energy. Nature can no longer be viewed as a cold, meaningless realm of virtually random events, and living creatures—and plants[19]—may exhibit a sheer physical pleasure in being alive and able to move rhythmically, even as they interact. In some instances, where coded information is generated and shared, the pleasure could perhaps be called intellectual, or at least a mode of cognitive play.

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[1] Usually all we know about the puffer fish is how they are used as food, test the courage of Japanese consumers, and serve therefore as markers of a peculiar gourmet taste in a culture radically different than our own. But if they are poisonous to humans unless carefully prepared for eating, the puffer fish have a very different meaning to themselves.

[2] Hiroshi Kawase, Yoji Okata and Kimiaki Ito, "Reproduction of a Martine Pufferfish" *Scientific Reports*, Article number 2106 (2013) online at http://www.nature.com/articles/srep0206.

[3] Douglas Main, "Pufferfish Love Explains Mysterious Underwater Circles" *Science Newsletter* (2 October 2013) online at http://www.livesceicne.com/40132-underwater-mystery-circles.

[4] Hiroshi Kawase, Yoji Okata and Kimiaki Ito suggest that normally only two males work within an observable area, thus the females have only one of two choices to make in each mating period. Once mating is completed, the female lays her eggs, and when they have hatched, the nesting site is abandoned. In other words, not all puffer fish in the region partake of the ritual construction or choose to make use of the site. Different individuals may move to the centre of the playground and engage in its activities at the next season. As with the manakin bird dancers, only a few mature and accomplished performers may ensure the reproduction of their

species during their lifetimes.

[5] Eric R. Kandel, *The Age of Insight: The Quest to Understand the Unconscious in Art, Mind, and Brain, from Vienna 1900 to the Present* (New York: Random House, 2012) pp. 278-279.

[6] "Male Blue Manakins wait in Line to Impress a Female" online at http://wwthekidsshouldseethis. com/post/male-blue-manakins-wait-in-line-to-impress-a female.

[7] Ian Sanple, "Male Birds Pair Up to Attract Female" *The Guardian* (23 February 2009) online at http://www.theguardian.com/science/2009/feb/13/bird-dance.

[8] Robert Heinsohn, Christina N. Zdenek, Ross B. Cunningham, John A. Endler, Naomi E. Langmore, "Tool-Assisted Rhythmic Drumming in Palm Cockatoos Shares Key Elements of Human Instrumental Music" *Science Advances* 3:e1602399 (28 June 2017)

[9] Heinsohn et al, "Tool-Assisted Rhythmic Drumming".

[10] Shaena Montanari, "In a First, Bird uses Tools to Make Sweet Music" *National Geographic* (28 June 2017) online at http:/news.nationalgeographic.com/2017/06/cockadoos-drumming-music-birds-australia.

[11] Ian Sample, "Cockatoos Impress Opposite Sex with Phil Collins-style Drum Solos" *The Guardian* (28 June 2017) online at https://www.theguardian.com/science/2017/jun/28/cockatoos-impresspopposite-sex-phil-collins-drum-solos.

[12] Heinsohn et al, "Tool-Assisted Rhythmic Drumming".

[13] Geggel, "Cockatoo drops Sick Beats".

[14] Heinsohn et al, "Tool-Assisted Rhythmic Drumming".

[15] Heinsohn et al, “Tool-Assisted Rhythmic Drumming”.

[16] Huizinga, Johan, *Homo Ludens: Proeve Ener Bepaling Van Het Spelelement Der Cultuur.* Groningen, Wolters-Noordhoff cop. 1985; original Dutch edition, 1938. English translation: *Homo Ludens: A Study of the Play-Element in Culture*. London: Routledge & Kegan Paul, 1949.

[17] Roger Caillois, *Les Jeux et les Hommes* (1958), translated into English by Meyer Barash in 1961 as *Man, Play and Games*.

[18] One of those relatively rare instances when Wikipedia can be trusted.

[19] The subject of a future essay.

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More by Norman Simms here.