



# **LEGO Speaks**

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## I. Introduction: LEGO speaks!?

Novelist Douglas Coupland has pointed out that familiarity with LEGO materials seems to be a common denominator among digerati in the Silicon Valley (1996). He notes, for instance, that LEGO appears to have clear 'linguistic connections' that make it particularly appealing to computer 'geeks,' who are comfortable with complex assembly languages. Coupland claims summarily that: "[i]t is safe to say that LEGO is a potent three-dimensional modeling tool and *a language in itself*" (ibid, 1994; italics added). The purpose of this paper is explore this extraordinary proposition, namely, that the branded global phenomenon called "LEGO" might be considered "a language."

Our exploration consists of answering a series of elemental questions having to do with the idea of "language." We begin by presenting some anecdotal evidence supporting the idea that LEGO enjoys widespread adult use around the world. We then analyze the proposition that it is "a language," organizing our analysis into three parts. First, we use semiotic theory to analyze LEGO as a grammar as well as a system of signs, demonstrating that the practically infinite combinability of its elements allows it to carry both spatial metaphors and temporal indices. Second, we identify multimodality and modularity as the distinguishing characteristics of the LEGO medium that provide it with significant, affective potency. We then demonstrate that the pragmatic benefits of LEGO include its capacity to provide multiple channels for expression and intensive interaction between adults. Finally, we speculate regarding how this capacity might be used more effectively among adults and we point to a series of other associated areas where future research might be carried out.

### Adult Builders

Over the past 60 years, global sales of LEGO bricks have topped 320 billion - roughly the equivalent of 52 LEGO bricks for each of the world's 6 billion inhabitants<sup>1</sup> - and in 2000, Fortune magazine and the British Association of Toy Retailers voted LEGO "Toy of the Century." At first consideration, this popularity would seem to depend on the approximately 300 million children who are the primary market of the LEGO company. But interestingly, the studded bricks appear to have become increasingly popular among adults for construction and communication purposes. Indeed, a September 2002 Google search indicates that 1.2 million websites<sup>2</sup> refer to the use of LEGO materials.<sup>3</sup>

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<sup>1</sup> The first version of the LEGO bricks was invented in 1949 and named "Automatic Binding Bricks". Until then there was no play *system*, only individual toys. The current brick type appeared in 1958 and replaced the Automatic Binding Bricks. The new type of coupling (stud and tube) made constructions far more stable and allowed more combinations. The brick was also patented in 1958. A 8 stud brick (2x4) measures 9,6 x 32 x 16 mm with a volume of 4.9152 cm<sup>3</sup>.

<sup>2</sup> A number of the sites in question are devoted to sharing and discussing historical and current products, but beyond this niche there is a vast array of sites devoted to sharing imaginative LEGO constructions created by men and women around the world. For instance, Avalonnia is a French language fantasy world where places and people are illustrated using LEGO constructions to encourage story telling and role play by adults ([www.avalonnia.net](http://www.avalonnia.net)). Other sites feature short and full length amateur movies in which the setting and characters consist of LEGO bricks and mini figures - one site calls this genre the "art of animating plastic bricks" ([www.brickfilms.com](http://www.brickfilms.com)). On yet another site we learn about

Interestingly, some websites explicitly discuss the use of LEGO materials as a 'language.' Witness this statement from a language teacher:

*"I teach simple, compound, and complex sentences and the subsequent punctuation by using LEGO [bricks]. I assign each colored/sized block a name (clauses, conjunctions, semi-colons, commas, and so on). The students begin to visualize and manipulate sentences as building blocks. I emphasize that no structure could hang together with only on size of brick stacked upon one another without proper connections"* (<http://teachers.net/lessons/posts/2641.html>).

Such a direct reference to the very nature and structure of language brings us to the main point, namely the degree to which LEGO can be considered a language. In order to evaluate this point, a series of elemental, basic questions have to be addressed: Can individual LEGO bricks be understood as analogous to a 'vocabulary'? Can the rules for assembling the bricks be understood as a 'grammar'? Could this LEGO vocabulary and grammar, coupled with the capacity of a group of separate elements to appear on a higher level of scale as a unified whole, constitute a 'language' that effectively communicates meaningful ideas? More generally, if we take the anecdotal evidence at face value, how exactly *do* LEGO bricks speak to adults? What makes the LEGO medium distinct from other media that are used to communicate ideas? What practical benefits recommend LEGO as a medium for communication? Finally, if LEGO can serve as effectively as some claim it can, where might its use by adults be explored more deliberately? Indeed, what is the ultimate potential of LEGO to speak to adults? With these questions to frame our analysis, we can begin to evaluate this proposition in a more controlled fashion.

## II. How do LEGO materials speak?

*Our attempt to inquire in what way, and to what extent LEGO materials can 'speak' or carry meaning begins with a semiotic analysis of their grammar and status as signs. In principle, a grammar specifies how a set of basic units can be composed together to form a bigger unit. In particular, it specifies a set of constraints on possible compositions, thereby distinguishing legal from illegal compositions. Such constraints are quantitative – specifying if a unit is allowed to appear in a composition – or contextual – specifying when a unit is allowed to appear in a composition. If there were no such constraints, that is, if the basic units of a language could be arranged together any way, then there could be no meaning from the combinations (just consider randomly rearranging the eleven words in this simple sentence).*

Now, combinability is the very essence of LEGO materials – bricks or other kinds. The number of possible combinations is no less stunning than the amount of sentences there can be in English. With six eight-studded bricks alone there are 102'981'500 possible combinations – and that calculation assumes that all

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"Brikswars," where teams of players use room-sized landscape of LEGO constructions to play out team-based battles between armies of mini figures. One participant observer of such a battle is quoted as saying: "Once again we all had a fantastic time. There were smiles, laughs, and in the end tears" ([www.nelug.org/bw063001/](http://www.nelug.org/bw063001/)).

<sup>3</sup> No matter what they feature, these unofficial sites are endorsed or sponsored by the originator of the polyvalent bricks, the LEGO Company, which is also often prominently mentioned on the home pages.

six bricks are of the same color. If we factor in the total number of available colors and shapes (approximately 2'000) the combinatorial capacity becomes practically infinite, exceeding the bounds of individual, human experience. This unlimited combinability thus presents a problem if LEGO materials are to be considered as a grammar. However hard we may look, we cannot find constraints on how to combine pieces. The very point of LEGO is that every type of piece fits onto every other type of piece. There are neither quantitative constraints (“never use more than three green plates in one construction”) nor contextual constraints (“never put a blue brick on top of a yellow plate”). To be sure, there are basic physical constraints on how specific tokens can be combined, e.g. that no two tokens can be in the same place at the same time. But beyond this, there seems to be no constraints on pieces being combined *qua* types, and this is precisely what is required in order to consider the LEGO materials as a grammar.

Does the absence of constraints on how to combine types of LEGO bricks mean that a LEGO does not have a grammar and that therefore there can be no such thing as a “LEGO language”? Not quite. There may be constraints on how LEGO bricks can be combined thus allowing the individual elements to constitute a grammar. However, this grammar may arise not out of the individual LEGO types or tokens themselves, but out of the social, artistic or pragmatic use of LEGO as a *medium* for communication. In this regard, semiotic theorists have identified grammars for visual design (Kress and van Leeuwen 1996), film (Metz 1974), behavior (Burke 1969), story (Propp 1968, Prince 1982), and much more. Thus while it is important to keep in mind that such grammars are very different from each other, nevertheless it is legitimate to call them all ‘grammars’ because they consist of a set of constraints on the composition of constituent parts, defining which compositions are legal and which are not.<sup>4</sup> In this light, the grammar of LEGO does not pertain to the types of bricks that are used in communicative practices, and it may not ultimately pertain to the token LEGO bricks that are used in particular instances of communication. Thus before we settle the question of whether or not LEGO materials constitute a grammar, we must open our inquiry up to consider the process of communicating by external, visual means.

Processes of visual communication depend on the deployment of signs. A sign is anything that stands for anything else. For instance, smoke may stand for fire; a fast pulse may stand for fever, the word “dog” for a dog, and a rectangular bottle for poisonous content. From the formal, analytic perspective of semiotics (defined as the study of the role of signs in communication) languages such as English constitute one mode of signification among many others, including traffic signs and painting. From this perspective, it appears that LEGO can signify in a variety of ways. As an illustration of this point, consider the various ways in which single, red LEGO brick can function visually in accordance with the seven classical categories of signs:

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<sup>4</sup> However, “legal” can mean different things in different grammars: “appropriate” or “rational” when applied to behavior, “tasteful” or “conventional” when applied to visual design, and so on.

*Icon* (a signifier that resembles its referent): “This red brick stands for a brick stone”.

*Index* (a signifier that is causally or physically related to its referent): “This red brick stands for the LEGO wall I just built.”

*Symbol* (a signifier that is only arbitrarily linked to its referent): “This red brick stands for my passion.”

*Metaphor* (a signifier standing in for another signifier on grounds of similarity): “This red brick stands for our modular approach to the task.”

*Metonymy* (a signifier standing in for another signifier due to causal or physical relatedness): “This red brick stands for my son”.

*Synecdoche* (a substitution of part for whole or vice versa): “This red brick stands for a wall”.

*Irony* (a substitution of something for its opposite): “This red brick stands for my efforts at becoming a full grown-up.”

When it comes to evaluating the significance of any one LEGO sign, the above categories need not be mutually exclusive. Metaphor may also be iconic to the extent that there is a resemblance between source and target concept or symbolic to the extent that this resemblance is not obvious (as in many “dead” metaphors like “he is a good sport”). Similarly, metonymy and synecdoche may function indexically. Such overlapping does not present an obstacle for our present analysis because these analytic categories are not intended to classify and categorize particular LEGO signs, but rather to expand our theoretical and practical understanding of how the LEGO medium allows people to signify meaning in the first place. But then, what exactly makes our archetypal red LEGO brick a sign?

Formally speaking, any unit that has semantic content (i.e., any unit that signifies or stands for something else) is a sign. Therefore, any sign can be made up of other signs, and any sign can in turn, form a part of two or more other, distinct signs. Any higher level sign – a sign that contains other signs – can be referred to as a landscape of signs. The relationship between constituent signs and higher level signs is one of carrier and attribute (cf. Kress and van Leeuwen, 1996). When two or more signs enter into a relationship with each other – i.e., when a carrier sign holds multiple attributes – the relationship itself forms a metaphorical landscape of signs. So for example, if instead of a red brick we use LEGO materials to build a red haired person holding a hammer, is it the person as a whole, or merely a part of this person, like the hair, which is the sign? Formally speaking, the LEGO person in question can be considered as a metaphorical landscape of signs unto himself, the red hair being an attribute sign in relation to the carrier sign “person”. The hammer is part of a bigger landscape of signs -- “person holding hammer”-- and the relationship between hammer and person sign is one of subject and object. In this light, LEGO materials appear to serve effectively as a medium in which such metaphors may be constructed and communicated. And it appears to be the three-dimensionality of LEGO materials that allow them to function particularly well as signs to communicate spatial metaphors.

Spatial metaphors are ubiquitous in our everyday life: we talk of “getting *down to* the details” or “getting *into* the habit of staying up late”; we think of our computer screen as a “desktop”; or we open our arms wide to indicate how much we love someone. Lakoff and Johnson (1980) and Johnson (1987) have argued that such metaphors are not just pure adornments, giving some color to our expression, but constitutive of our cognition. All visualization of information is, after all, nothing else than the translation of information into a spatial metaphor. We visualize abstract, logical sets as Venn diagrams, our experience of time as a timeline, hierarchical relations as tree diagrams, and processes as flow charts. In this light, it appears that the medium of verbal speech cannot fully exploit the power of spatial metaphors because it cannot express spatial metaphors in two or three dimensions, but only one – time. Consider this spatial metaphor for example: we say of people that trust each other that they are “close.” Now, a verbal explanation of the relations of trust between eight people can become very tedious indeed. By the time we have gone through the list our interlocutor might have forgotten what we said first. But if we just draw it on a sheet of paper, it suddenly becomes very easy. Still using the same metaphor of ‘closeness’, but now using a two-dimensional medium, we can cluster together those people that form a clique and place others who may not belong to the in-group further away. In view of such a visualization of the information, our interlocutor will not have to process it all in a linear, narrative fashion, but can instead take it in all at once, as a spatial pattern. In this regard, LEGO materials appear to provide individuals with an incredibly wide variety of materials from which signs can be constructed as visualizations of complex, abstract spatial metaphors.

By extension, LEGO also appears to function particularly well as a representation of temporal relationships. Although a metaphorical landscape of LEGO signs cannot change over time without human assistance, it can still embody temporal indices (what Kress and van Leeuwen, 1996, called “vectors”). A temporal index signifies the unfolding of an event, of movement and change. A temporal index is an *index* because it points to an event that is going to happen but it is not that event itself, and it is a *temporal* index because it points to something which inhabits the dimension of time. It is anything that can point in a temporal direction toward something which may happen -- an outstretched arm, the front end of a gun, or a gaze. A still life has no temporal indices whereas a LEGO construction may have several. Examples include a mini figure that appears to be walking, or a series of bricks that appears to continue into something else. In this sense, LEGO constructions call for a narrative; we are prone to ask “what then?” even though the construction itself may be static.

In sum, while LEGO materials cannot be properly considered as a grammar due to the lack of constraints on their possible combination, LEGO materials do function exceedingly well as a medium in which a visual grammar of signs can communicate complex information using spatial metaphors and temporal indices.

### III. What makes the LEGO medium distinct?

If we grant the formal, semiotic claim that LEGO materials can be used as a medium in which a visual grammar of signs can signify spatial and temporal

relationships, still we have not begun to address the broader question why adults seem to choose the LEGO medium over other media in particular pragmatic and social situations (e.g., language-learning, computer programming, etc.). In this regard, this section of the paper begins to explore the multimodal and modular aspects of the LEGO medium, placing special emphasis on the affective, or emotional significance of the information that is communicated.

Because LEGO materials come in a wide, though limited variety of shapes, of colors, and of textures, LEGO signs carry limited ambiguity or vagueness. Every LEGO piece possesses exactly one of those shapes, one of those colors, and one of those textures. No piece is blue *and* red; or something *between* a brick and a plate. It is red or it is blue, it is a brick or it is a plate. In most other media, like speech or painting, the basic ingredients are not as easily distinguishable as in LEGO signs. LEGO signs thus retain an irreducibly *modular format* no matter how complicated a construction or a landscape of LEGO signs may become. The features of discreteness and standardization shape everything that LEGO materials signify. This modularity defines, so to speak, the lower limit of granularity that anything signified by LEGO materials can reach. Coupland (1994) has put this very well:

“The charm and fun of LEGOLAND stems from seeing what was once organic, reduced to the modular: a life sized zebra seemingly built of little cubes; cathedrals as seen through the “Hard Copy” TV lens that converts the victim’s face into small squares of color; a statue of Hans Christian Andersen as constructed by Chuck Close.”

With a strong medium such as LEGO, the modular formatting of information could even go as far as shaping not only the message, but also the mind that sends the message: Intensive, long term occupation with LEGO as a means of signification might even create a “LEGO shaped mind.” Coupland (1994) again:

*“The LEGO universe thwarts entropy ... The children of LEGO grew up dreaming of another world – a seamless world of .. modularity, indestructibility, sound bites, acrylonitrile butadiene styrene. And now this generation .. will help bring the world closer to a vision of LEGOLAND.”*

McLuhan and Fiore (1967) coined the slogan “the medium is the message” to explain that media not only transmit neutrally but they also shape the message. When we not only relate to things *through* the medium, but relate to the medium itself – we love it or hate it, respect it or despise it – we take a stand towards the medium itself. In this way, the medium becomes “cathected.” Cathexis is the investment of emotional energy in an object, the process by which emotion is “attached” to something. Thus, the medium can take on an even more important role than McLuhan posited: it is no longer only a medium through which communication passes, but almost a participant in the communication itself. When the medium does this double work of shaping the message and stimulating cathexis, it may seem to take on a life of its own. How then do adults perceive the life of LEGO?

LEGO signs are a medium that can be perceived through all our senses: We can see LEGO bricks, we can touch or feel a construction; we can even smell or taste it if we like; and we can hear the clicking of bricks against each other. This *multimodality* of LEGO signs creates a range of dimensions through which affective associations are evoked in us. Witness this first-hand account:

“There is hardly anything smelling as interestingly as the grey rubber tyres of LEGO wheels. When bricks were first made of ABS I immediately noticed this from the smell. They had become more salty and they smelled more strongly. Casually fingering an eight-studded brick is just so agreeable. There is this sensation of simultaneously feeling the protruding studs on top and the hollow studs on the underside ... This is the LEGO feel.” (*Glaser 19xx*)

Media thus provide us not only with content, but also with a raw sensory experience of themselves. But we can never appreciate this raw sensory experience in its own right; the shapes, the colors, the texture, the clicking sound, the smell – they all trigger associations with objects or places that look, feel, or smell similarly. It is on this level that people tend either to fall in love with LEGO or to hate it. Here is a character from Coupland's novel *Microserfs* (Coupland 1996) speaking, who is obviously not liking LEGO:

*“What do I think of LEGO? LEGO is, like, Satan’s playtoy. These seemingly ‘educational’ little blocks of connectable fun and happiness have irrevocably brainwashed entire generations of youth from the information-dense industrialized nations into developing mind-sets that view the world as unitized, sterile, inorganic, and interchangeably modular... LEGO is, like, the perfect device to enculturate a citizenry intolerant of smell, intestinal by-products, nonadherence to unified standards, decay, blurred edges, germination, and death.”*

This strong cathexis that LEGO occasions thus seems to have far-reaching consequences for the informational content it transmits. The LEGO medium not only formats the message (as McLuhan and Fiore have observed) but confers a host of affective associations onto the content – the content starts to feel like the medium. This transformation becomes very obvious when we look at extreme cases. For example, when we build a rotting apple in LEGO, it won't smell like a rotten apple, and on close inspection it will not even really look like a rotten apple. To the contrary: LEGO will subvert the intended image and turn the rot into something that is cute, clean, hard, and durable – all of which rot is not. The affective associations that LEGO evokes are so strong that they overlay the associations that a rotting apple evokes in us in reality.

In terms of their potential for cathexis, it appears that there are strong and weak media. Of course, this relative strength or weakness may in fact not be a property that is intrinsic to the media itself, but rather it may derive from the status of the medium in a social or cultural context. People are so used to hearing the news on the radio that the affective associations of the medium are

not overlaying the content very strongly anymore. LEGO, in contrast, is a very strong medium, at least in cultural settings where it is a popular toy. But there are also strongly and weakly cathected *contents*. Both strong media and strong content tend to assert themselves. If the content is weakly cathected – as the rotting apple – the medium will impose its affective associations; if the content is strongly cathected – as in news about a horrible traffic accident – the content's affective associations will eclipse the medium's. If both are strong, a veritable struggle between the two can ensue.

A stark illustration of such a struggle are the concentration camp kits built from LEGO materials by the artist Zbigniew Libera.<sup>5</sup> Many people have accused Libera of cynicism, of trivializing the Holocaust. For many people it may seem somewhat obscene to build a concentration camp with LEGO materials and to display such a construction with a LEGO logo against the wishes of the LEGO company. Whether we relish the subversion of conventional forms of representation or condemn the trivialization of traumatic events and places, the case itself presents an extreme example of the medium *and* content asserting themselves. Confronted with the signs themselves, we may well oscillate between seeing the representation of a concentration camp and seeing a LEGO construction – but it remains difficult to reconcile the emotional dimension of the content with the emotional dimension of the medium. The medium subverts the content and the content subverts the medium, and through this process both the content and medium appear to be drawn away from the values that have, through cultural convention, become inherent in them.

In any case however, it is relevant to emphasize that the LEGO medium is distinct from other media because, in addition to providing a visual grammar of spatial and temporal signs, it provides a modular format that is multimodal, speaking to different senses at once and bringing affective associations that shape the message that is communicated.

#### IV. Why choose LEGO to communicate?

After looking from different angles at what makes LEGO distinct as a medium of communication, we are now in a position to give an overall assessment of the communicative potential of LEGO materials. Such an assessment requires us to take up a more pragmatic line of argument. So far, we have focused on the consumption rather than the production of LEGO signs. But even though every LEGO sign may be perfectly capable of speaking for itself, behind every LEGO sign there is a human agent that has assembled it. To paraphrase Maturana and Varela (1997), every LEGO sign is built by somebody. So each act of interpreting a LEGO sign is a communication not only between a sign and a human but between two humans – however indirectly. To assess why people would choose LEGO as a medium for communication, we need only synthesize the modular format and three-dimensional multimodality outlined above. To wit: LEGO signs appear to offer great potential for communication because the

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<sup>5</sup> The LEGO Company had donated the material to the artist Libera. When it was clear that he used the materials in a way that was contrary to the LEGO Company's values it distanced itself from this work and publicly stated that there would have been no donation if Libera had been clear about his aims.

medium can convey a great deal of information while inviting a high degree of interaction and participation. In other words:

The three-dimensional multimodality of LEGO signs allows them to convey information in a way that is emotionally impactful and thus, memorable.

The modular format of the LEGO visual grammar of signs increases the potential for interactive communication.

This section of the paper will explore these two claims in greater detail. Multimodality increases communicative capacity to the extent that each modality provides a different channel for conveying information. A LEGO sign does not merely signify what its shape resembles, say “house” or “elephant,” but the various aspects of LEGO’s materiality have additional semiotic qualities. For instance, take color. In our occidental culture, red signifies “love” or “passion”, black signifies “death” or “depression”, and white signifies “innocence” or “purity”. Similarly with other modalities, there are textures that signify “cheap” and others that signify “posh” or “funky” – and so on. Thus, in choosing the LEGO medium of signs one also chooses a material, a texture, a granularity – all of which have some signification. This signification is not necessarily intrinsic to the particular texture or granularity of LEGO. Rather, it is embedded in social and cultural patterns of assigning meaning to or valuating a particular texture, granularity, etc. By constructing a LEGO sign, the producer can also choose shapes and colors and consciously deploy them as different forms of signs to carry distinct significations. For instance, a LEGO elephant can be intended to serve both as an icon (signifying “elephant”) and a metaphor (signifying “thick skinned”). Of course, there never any guarantee that the message sent through all those channels will be interpreted in the intended way, since producer and consumer of a LEGO sign do not necessarily draw on the same web of meaning to interpret all aspects of the sign’s materiality. Furthermore, the intended meaning and the actual interpretation are equally grounded in affective associations attached to the LEGO medium. Sympathy or antipathy for the medium will therefore always impact the signified, and if the affective associations of the producer and the consumer are at odds, the intended message may well be distorted. Such problems pertain to communication *per se* and do not diminish the communicative potential of LEGO signs in particular. Indeed, the fact that the multimodality of LEGO signs may increase the potential for misunderstanding is just the flipside of one of its biggest strengths, namely that it provides both the producer and the consumer with multiple channels to send and receive information.

In view of this communicative capacity, the LEGO signs that we are normally exposed to – photographed constructions on the internet, the sculptures at LEGOLAND – make relatively little use of LEGO signs’ potential for communicative interaction. We have in the previous section stressed the constraints the LEGO modular format puts on the content. Now we will attempt to show that this very constraint may, paradoxically, be a source of great freedom when it comes to the *use* of LEGO. What then are the pragmatic benefits of using LEGO materials to communicate?

Low barriers to participation: *Anyone – literally, any child or adult with basic manual competencies – can use LEGO. Unlike other media – think of oil painting – LEGO does not require specific talents, exceptional hand-eye coordination or a lot of training and experience. The moment you connect your first two LEGO bricks, you are already becoming an expert. Even the most complicated construction is not technically more difficult than putting those first two bricks together. What is scalable in the use of LEGO is not the technique, but only the number of bricks used. In LEGO there are no virtuosos; or put differently: everybody can be as much a virtuoso as everybody else.*

Repeatability by anyone, anytime: *Oil paintings start out with little sketches, then the canvas might be mapped out with a coal pen, and finally layer upon layer of paint is applied. In the end product, we only see the topmost layer; the process by which the painter got there, however, has become invisible. When contemplating a painting, we often wonder: how did the painter get there? What exactly had to be done to create this or that effect? With LEGO materials there never are such questions. Any LEGO sign is also its own blueprint. There is no mystery or genius behind the way a LEGO sign was assembled. Even the biggest and most elaborate construction can be repeated by anyone, given enough time and material. The only distinction a LEGO builder can ever get, is to have gotten there first, but whatever the feat was, anyone could have done it.*

Complete reversibility: *LEGO has a reset button that many other media do not. Whatever is built in LEGO can be deconstructed at no cost other than a little time, and then it can be rebuilt again. A painting, in contrast, cannot be unpainted; the color cannot be taken off the canvas and forced back into the tube. Disassembling a painting means destroying it and destroying it means losing what is unique about this painting – the brushstrokes that only this one painter could produce. In LEGO signs nothing can get lost, since whatever is destroyed can be re-created without any loss of information. We can go from order to disorder and back as many times as we like.*

Complete connectivity: Thanks to their standardized, modular format, LEGO materials can be connected in any way. Every piece fits onto every other piece, and any piece can take the place of a piece of the same type.

These four features of LEGO signs – connectivity, low barriers, repeatability, and reversibility – create a space in which extensive interaction is possible. LEGO signs are therefore an extremely inclusive medium – as inclusive as it gets. The modular LEGO format thus makes everybody equal with respect to the power of expression. While in painting the genius and in politics the good rhetorician may attract the most attention, LEGO provides a medium in which everyone can communicate. LEGO signs are an instantiation of the open source idea, *avant la lettre*. Notions of originality and plagiarism, of exceptional skill or talent are not applicable. More importantly, LEGO signs offers the potential of *co-construction*. Unlike in speech where each word can only be spoken by one speaker, in LEGO the exact same sign can be in the hands of many people. LEGO signs' communicative potential is thus most fully exploited where people engage in co-constructive processes of signification. In this sense, LEGO provides a medium in which ideas can be collectively proposed, considered, re-considered,

negotiated, simulated, and transformed. Indeed, the LEGO medium appears to be optimally suited to intensive, communicative interaction.

V. Conclusion: In what situations might LEGO enable more effective communication for adults?

The widespread adult use of LEGO materials that is manifest on the internet and elsewhere may be generally explained as an embrace of the capacity for intensive, communicative interaction that the LEGO medium affords. Children who use LEGO may well experience emotional, social and cognitive benefits as a result of their play, but insofar as adults have a more developed ability to reflect on, evaluate and select different media for expression, the adult embrace of LEGO is more interesting from the perspective of social semiotics (Halliday, 1978).

In keeping with the pragmatic origins of semiotic theory (Pierce 1958), we believe it is appropriate to speculate regarding those domains of adult life that might benefit from the self-reflexive, deliberate use of LEGO materials as a medium for intensive communicative interaction. Framed in terms of need, in what instances do adults appear to suffer the *lack* of an expressive grammar of signs that carry a wide range of possible significances while remaining fundamentally accessible and amenable to collaboration among interested parties? In the interest of inspiring further inquiry, we name *therapy, teaching and experiential learning* and *organizational processes*. Data already shows that these are likely to be fruitful paths for investigation.

There is a longstanding tradition in the world of therapy of using play-based approaches to deal with a variety of cognitive (e.g., Sharlin et al., in press) and emotional (e.g., Klein, 1932; Axline 1969; Winnicott, 1971) psychological issues. Although there is considerable anecdotal evidence that LEGO materials are used by different therapists, no systematic approach has yet been developed. Nonetheless, the multimodality and modularity of LEGO materials would seem to be highly amenable to the needs of therapists and their patients, if used as part of a well-designed process under the supervision of professionals in the field.

As the quotation from the teachers.net site above indicates, there is already considerable experimentation in the use of LEGO materials for pedagogical purposes underway. A case in point is the Edventures.com organization (discover.edventures.com), which lists several pages on its website of learning activities that use LEGO materials, in a great variety of technical and non-technical fields (see also [www.weirdrichard.com](http://www.weirdrichard.com)). More specifically, the pedagogical paradigm of 'experiential learning' provides ample justification and precedent for the use of LEGO materials by adults. For example, a forestry course offered at a college in Washington uses LEGO "to demonstrate metaphorically the relationships between site resources and growth of trees of certain sizes" ([www.snr.missouri.edu/meetings/FORESTRY\\_PEDAGOGY.htm](http://www.snr.missouri.edu/meetings/FORESTRY_PEDAGOGY.htm)). An Operations Management course at a college in New York uses LEGO to introduce "linear programming theory in the context of production and resource allocation" (<http://web.lemoyne.edu/~wright/lego.htm>). Such examples suggest that

LEGO materials could add significant value to adult educational activities of many kinds.

In view of such opportunities, it is important to note that the managerial consulting and training disciplines which focus on enhancing organizational processes (such as organizational development, or organizational effectiveness) typically use experiential learning methods to achieve their ends. For instance, the organization called "Human Excellence" based in Austin, Texas, develops experiential education programs that aim for both effectiveness and fun. Working with one of their clients, the Samsung Austin Semiconductor unit, the Human Excellence group had a large cohort of managers undertake a building exercise using LEGO materials, in which they actually built workable equipment. While creativity is highlighted in this exercise, the key point is that it is also a clever, playful, but highly experiential activity which captures key elements of experience while making experimentation and learning non-threatening (see the site <http://www.refresh.com/blabbermouth.html>). A report from another business consultant who uses LEGO materials in a variety of exercises clearly states the value that can be obtained:

*Without exception, people reported positive experiences. Participants like assembling structures and meeting challenges with the pieces and facilitators like designing activities with them. They are colorful, reusable, flexible in application, and engaging for participants. And it took many of them immediately back to a playful childhood framework of experimentation and concentration (from [www.business.com/](http://www.business.com/))*

In sum, the potential for exploration and experimentation using the medium of LEGO materials with adults in areas such as therapy, experiential learning, and organizational processes would seem to be significant.

We began this paper with novelist Coupland's claim that LEGO is "language in itself." Using semiotic theory we argued that LEGO materials constitute a medium with a visual grammar of signs that we can use for our communications. Furthermore, we have shown that the capacity of this medium to carry both cognitively abstract as well as emotionally charged information derives both from its modular format and from its multimodal appeal to the various human senses. Finally, we have explored the pragmatic benefits that the medium offers to people who choose it: low barriers to entry, repeatability, reversibility and connectivity. We conclude that, formally speaking, Coupland was not right – LEGO is not a language in itself. However, we have found that LEGO materials may serve as a medium with an inherent potential to give rise to new forms of communicative interactions among adults. In such interactions a LEGO brick may become more than just a 3D rectangular piece of plastics. It may become a sign that carries cognitively abstract and emotionally charged information, thereby bringing about a new kind of language. In this respect, maybe Coupland was just a few years ahead of his time.

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