# CREATIVITY TASKS AND CODING SYSTEM – USED IN

# THE PLASMA DISPLAY WINDOW STUDY

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**ABSTRACT**

Few would disagree about the importance of creativity in human life.  At the same time, creativity has proved difficult to measure empirically.  In this technical report, we describe three creativity tasks – the Droodle Creativity Task, Modified Droodle Creativity Task, and Unusual Uses Creativity Task – and their corresponding coding systems.  The first two are new tasks with novel analyses, the third an existing task with a reconceptualized analysis.  All three contribute to the broader literature on conceptualizing and measuring creativity.

**INTRODUCTION**

Few would disagree about the importance of creativity in human lives. Indeed, some of the most influential and honored individuals in both modern and historical times are recognized for their creative thinking. Mozart's compositions. Crick and Watson in their discovery of DNA. Piaget in his theory of the ontogenesis of human cognition. At the same time, creativity has proved difficult to measure empirically. In this technical report, we describe three creativity tasks – the Droodle Creativity Task, Modified Droodle Creativity Task, and Unusual Uses Creativity Task – and their corresponding coding systems. The first two are new tasks with novel analyses, the third an existing task with a reconceptualized analysis. All three contribute to the broader literature on conceptualizing and measuring creativity.

The three tasks themselves were used within the context of a larger environmental-psychological study. Thus we would first like to provide an overview of this study, so that the reader has better sense of how the tasks were used.

The study – which we refer to as "The Plasma Display Window Study" – builds on a large body of diverse literature which has shown that direct experiences with nature have beneficial effects on people's physical, cognitive, and emotional well-being. For example, Ulrich (1993) found that post-operative recovery improved when hospital patients were assigned to a room with a view of a natural setting (a small stand of deciduous trees) versus a view of a brown brick wall. Other studies have shown that looking at a natural landscape can reduce immediate and long-term stress, reduce sickness of prisoners, and calm patients before and during surgery (see Kahn, 1999, for a review).

In recent years, technological augmentations of the natural world have begun to be inserted into human/nature interactions. For example, currently it is possible to go on-line to

garden "remotely" by controlling a robot in a distant garden (Goldberg, 2000). In this situation, the technology acts as an intermediary to facilitate a human/nature interaction. Nature films are another example wherein the film mediates a "real" nature experience.

As technological augmentations become increasingly sophisticated and pervasive in human lives, important questions need to be answered. Is it the case, for example, that through augmented interactions with the natural world we can achieve similar psychological effects to their non-augmented natural counterparts? If so, then technology would provide a powerful and pervasive means to foster human well-being. Or is it the case that in some ways – perhaps many ways – augmented reality of the natural world falls short? In this larger study we investigated these questions in terms of a specific augmentation whereby an image of a local nature scene is projected (in real time) onto a large video plasma display in an indoor windowless office. In this way, the plasma display substitutes for a "window" out onto one's immediate natural world.

We set up a between-subject experiment that involved three conditions. Each condition employed the same office on the University of Washington campus. In one condition, the view was the normal window view from that office as it overlooked a nature scene that included water in the foreground, as part of a public fountain area, and then extended to include stands of deciduous trees on one side, and a grassy expanse that allowed a visual "exit" on the other. This office view was chosen to include features that people usually find aesthetically pleasing and restorative in nature (Kaplan & Kaplan, 1989; Orians & Heerwagen, 1992; Wilson, 1984). In a second condition, a 50 inch plasma screen was inserted into the office window, entirely covering it (Figure 1a). We then mounted an HDTV camera approximately 15 feet higher on top of the building (Figure 1b) and, through hard cabling, displayed on the plasma screen almost the identical image one would see from inside the office itself. Thus, in effect, the plasma display

functioned as a technological "window."  In the third condition, we sealed off the original

window with light-blocking material, and then covered it with drapes, in effect turning the space

into an inside office.

**Figure 1: The Technology in the Plasma Display Window Study**





(a)  The plasma-display window covered up the same-sized real window used in the window view condition.    The recording camera can be seen through the drapes to the left of the plasma display.  The drapes were pulled across the entire wall for the blank-drapes condition.

(b) The HDTV camera was mounted on the roof  directly above the office used in the study.

Among other measures (including those that entailed physiology, eye gaze, performance

on a proof-reading task, and reasoning as assessed through social cognitive interview), we

employed the three creativity tasks.  Each task is now described in detail in its respective section

of this technical report, along with the coding system used to code each task.

**PART 1: DROODLE CREATIVITY TASK**

**Introduction**

A droodle is a simple abstract drawing that "comes into focus" (in a surprising way) with the

addition of a clever title. Here is an example:

A BEAR CLIMBING UP
THE OTHER SIDE OF A TREE
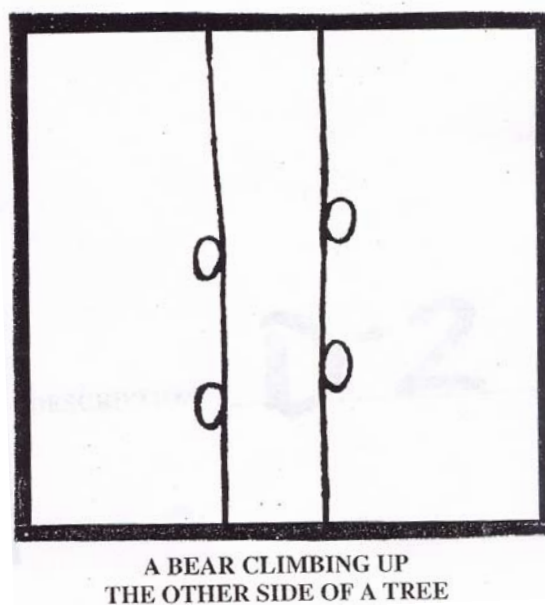
The Droodle Creativity Task asks participants to generate titles for specific Droodle

drawings. Droodles used in this task were taken from *Droodles: The Classic Collection* (Price,

Lovka, & Lovka, 2000). This task is primarily a creative language task in that it draws upon

people's ability to use language in witty and creative ways around an image or figure. Other

tests of creativity have similarly assessed language. For example, Guilford developed a task in

which participants had to create clever titles for story plots (Torrance, 1962). At the same time,

participants are constrained by the drawing as the Droodles often pull strongly for certain

interpretations.

**Task Directions**

"For this task you will be asked to provide a creative description of some drawings called Droodles. A good Droodle has a title (or one sentence description) that makes you look at the drawing in a surprising way. Below there are some examples of Droodles. Please spend a minute to familiarize yourself with them. On the next two pages, you will find four Droodles. For each one, decide what the Droodle is a drawing of and write a description to match the drawing. Remember, the best descriptions have an element of surprise. You will have 3 minutes."

Notes: (1) See Appendix A for complete task materials. (2) The Droodle task is given prior to the Modified Droodle as it serves as an informal training with Droodles necessary for completion of the Modified Droodle Creativity Task.

**General Notes**

(1) We are interested in the overall relationship between the drawing in the Droodle and the Droodle Title.

(2) If there is more than one title on the line provided OR more than one title written in the practice space provided, score the Droodle with the "best" of the titles provided.

(3) If a Droodle Title contains distasteful content (e.g., racist, sexist, etc.), do not consider the distastefulness of such content in coding the Droodle. In other words, it is possible for one to make a distasteful reference or include questionable content while successfully completing the Droodle task based on the criteria below.

(4) If a Droodle resembles a *Classic Droodle* from Price, Lovka, and Lovka (2000), code the Droodle as if the participant had no previous exposure to Droodles. We did not account for participant's previous external experiences with Droodles, thus code each Droodle

with the assumption that participants do not have previous external experience with Droodles. Likewise, if a Droodle looks similar to an *Example Droodle* (i.e., from the examples provided in the task instructions), code the Droodle as if the participant had constructed the Droodle themselves. We are not accounting for internal task experience as strategies used in the Example Droodles are common to Droodles, in general, and more obvious copying of Example Droodles happened rarely in our sample.

(5) Google Clause: If a participant makes reference to an event, person, place, etc. in their Droodle that is unknown or unfamiliar to the Coder, the Coder may use Google (or other internet search engines) to find information so that they are able to understand and thus code the Droodle.

(6) The rotation of a Droodle is acceptable in the completion of this task. If a participant created a title based on the rotation of a Droodle (e.g., turn paper 90° to left), code as usual.

**Consensus Coding Methods**

The coding categories were developed from half of the data. Five prototypic Droodles were selected for each coding category (high, medium, low, non-droodle) for the four Droodles from the same half of the data by consensus during coding manual development. Then three different coders ("Consensus Coders") were trained in the coding process. Consensus Coders first coded all of the Droodle data independently, and then reached consensus together for any Droodle on which they did not independently agree. It was possible during the consensus phase that Consensus Coders continued to "see" a Droodle differently. In such cases, when unanimous consensus could not be reached, the dissent was indicated (e.g., 2 of 3 Consensus Coders agreed

that Droodle X received a "Medium" code).  The consensus codes were used as the final (official)

codes.

## General Coding Process

The following coding process is used by Consensus Coders for both independent coding

and consensus coding for those Droodles on which all of the Consensus Coders did not

independently agree.  Use the sort method of coding; that is, sort the data set into piles of Non-

Droodle, Low, Medium, or High Droodle.  Then, double check the sorting of the piles before

recording the codes.

(1)  Initial Reaction – Determine your initial reaction to the Droodle.  Did you have an "aha"

(gestalt experience), "aha, but…" (awkward gestalt experience), or "blah" (no real gestalt

experience) response to the title?

(2)  Pattern Matching – Determine if the Droodle is similar to the prototypic titles provided

for each coding category.

(a) Style and Strategy – Match the title based on similar strategies or styles (e.g.,

abstractness or literalness – see below), rather than a literal match (i.e., this title is *just*

*like* the prototypic).  Does the Droodle have a similar style or strategy as any of the

prototypic Droodles?

(b) "Aha" Response – Match the Droodle in terms of the "aha" experience. Does the title

elicit a similar gestalt ("aha", "aha, but...", or "blah") response as any of the

prototypic Droodles?

(3) Categories and Rationale – Consider the strategies conveyed by the Droodle (see Part 2, Section C). Use the strategies to create a rationale for your initial reaction and *not necessarily as a way of challenging your initial reaction.*

(4) Overall Assessment – Based on the above process, what is your overall assessment of the Droodle? Code High, Medium, Low, or Non-Droodle.

## Section 1. Coding Categories

(1) **Non-Droodle** – refers to Droodles that (a) lack a title, (b) the title lacks coherence or relevance with regard to the drawing, or (c) marginal relevance with the drawing does not depend on the intentional creation of the title at hand (i.e., any randomly generated title could possibly have marginal relevance to the drawing).

(2) **Low** – refers to Droodles that (a) are literal in that the title provides a satisfactory description of the drawing, (b) attempt to convey a Droodle strategy without success, or (c) lacks coherence (see section C.2.). When viewing the Droodle, the response is more of a "blah".

(3) **Medium** – refers to Droodles that (a) are somewhat literal but successfully convey a Droodle strategy, (b) are somewhat abstract (see High) and successfully convey a Droodle strategy, but lack the luster or coherence of a High Droodle, or (c) may lack coherence (see section C.2.). When viewing the Droodle, the response is more of an "aha, but…" or "okay, sure".

(4) **High** – refers to Droodles that (a) are abstract, meaning that they make use of abstract drawings and successfully convey a Droodle strategy, (b) result in a shift or twist in how one would view the Droodle (may be a literal interpretation following the shift), (c) have

a certain sophistication or surprise, or (d) have coherence (see section C.2.). When viewing the Droodle, the response is more of an "aha".

**Section 2.  Prototypic Droodles**

Five prototypic Droodle titles were identified for each of the 4 Droodles used in this task.  The prototypic Droodle titles are provided below for each of the 4 Droodles by coding category.

**A.  Droodle 1**
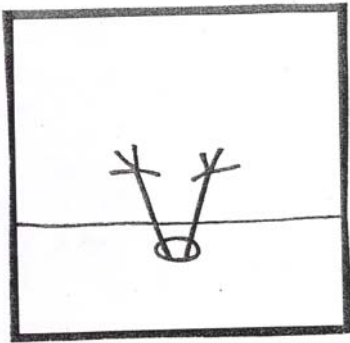


Note:  This Droodle pulls strongly for (1) a horizontal orientation because of the horizontal line, (2) a conceptualization of the circle as a hole, and (3) an interpretation of an animal or person in the hole.  Thus if the title reveals a different (1) orientation, (2) conceptualization, or (3) interpretation (and it is coherent), it will likely bump up the Droodle into a higher category.

**(1)  Prototypic Non-Droodle Titles:**

We did not identify any Non-Droodles in the coding development portion of the data, except those Droodles without titles.

**(2)  Prototypic Low Titles:**

(a)  "A bird in a mud puddle"

Reasoning: This title provides an interpretation that is out of proportion and thus incoherent. It is not clear how such a seemingly large bird would fit in such a small mud puddle (given the normal shallow depth of a puddle), or exactly how the orientation works.

(b) "Reindeer in a gopher hole"

Reasoning: This title gives a version of the animal/person in a hole. It lacks contextual coherence and plausibility.

(c) "A bird in a hole, upside down"

Reasoning: This title reflects the typical interpretation of this Droodle. Not a particularly interesting story-line as is seen in higher codes.

(d) "A very confused ostrich from below"

Reasoning: This title is an attempt to do something clever with a pun on ostrich behavior, but ultimately it is not successful because the orientation indicated ("from below") does more to confuse the viewer than help.

(e) "Person falling into a hole"

Reasoning: This title represents that typical characterization of a passive person falling in a hole.


**(3) Prototypic Medium Titles**

(a) "A frog in captivity"

Reasoning: This title gives a clever interpretation of the Droodle using a higher-order idea of captivity. The hole becomes a breathing hole in a box in which a frog is held captive and is trying to get out.

(b) "A worm that pulled the bird into its hole"

Reasoning: This title reveals an unseen element in the Droodle (a worm) that is actively involved in the story-line.

(c) "An ostrich that stuck its head too far in the sand"

Reasoning: The title is descriptive and it works, but lacks the abstraction needed for a high.

(d) "Bird stuck in a fallen tree"

Reasoning: The title casts a new interpretation (a tree) of the horizontal element, which was clever and unique.

(e) "Someone trying to climb out of an ice hole"

Reasoning: This title provides a more active conceptualization that seems more complex that passively "falling in". Certainly a more unique title.

**(4) Prototypic High Titles**

(a) "Help!!!"

Reasoning: A classic high Droodle title. It elegantly conveys the meaning of the Droodle without needless description. There is a sense of activeness (and even urgency) that is clever, creative, and compelling.

(b) "A very, very scared ostrich"

Reasoning: The use of a pun on ostrich's behavior is quite clever (i.e., ostrich put their head in the ground when frightened), as well as the matching the exaggeration of the language ("very, very") to the exaggeration of the ostrich's whole body in the sand.

(c) "The bird <u>really</u> wants that worm!"

Reasoning: Similar to the title above, the author makes clear the extremeness of the bird's behavior by attributing to it the strong desire to have the worm.

(d) "A Robin backing out of his nest in the tree hole"

Reasoning: This title provides a move away from the horizontal pull of this Droodle by rotating the orientation 90°. Furthermore, the narration is not of an animal in captivity, but an animal doing something quite natural.

(e) "Snowman melting into a puddle"

Reasoning: This title that breaks set from the idea of something in a hole and instead makes the circle a puddle. A unique, clever, and coherent interpretation.

**B. Droodle 2**
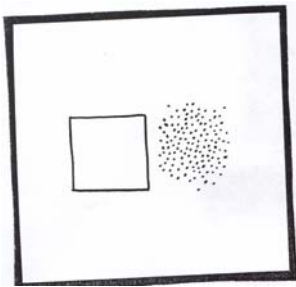


**(1) Prototypic Non-Droodle Titles:**

(a) "Swiss cheese with the holes on the side"

Reasoning: Not a coherent interpretation of the Droodle and does not make use of any of the strategies.

(b) "A picture loseing [sic] its dots"

Reasoning: Not a coherent interpretation of the Droodle and does not make use of any of the strategies.

**(2) Prototypic Low Titles:**

(a) "Aerial view of an army of bees guarding a house"

Reasoning: This title provides the classic interpretation of this Droodle (as insects), but lacks contextual coherence – why would bees be guarding a house? This nonsensical interpretation indicates a failed attempt to explain the Droodle.

(b) "A stinky cow behind the box"

Reasoning: This title attempts to put a silly twist on the swarm of insects theme, but the cow seems arbitrary and not particularly compelling. Admittedly this is on the more clever side as the author is pulling together the notion that insects follow stinky cows. Furthermore, the viewer has to understand that the dots are insects, and that insects indicate stinky cows. This would have been more successful and coherent if they had titled it "a stinky cow inside the barn."

(c) "Modern art"

Reasoning: This title could realistically be given to *any* Droodle, and therefore is not at all compelling.

(d) "Bees outside a square"

Reasoning: This title is too representational ("square") while using the classic interpretation of insects. It would have been more successful if the square wasn't a "square", but something else that made sense with bees (e.g. hive).

(e) "Freshly ground pepper next to a paper napkin"

Reasoning: This title gives a static interpretation of the Droodle. Compare this Droodle with the High version and explanation. Furthermore, it is seems somewhat

arbitrary (although they are attempting coherence) as it is not clear why ground

pepper would be next to a napkin.

**(3) Prototypic Medium Titles**

(a) "An escaped bee colony"

Reasoning: Classic interpretation of this Droodle. This has good coherence as bees

are known to swarm and the box easily represents a beekeeper's hive.

(b) "Bees flying out a window"

Reasoning: Another version of the above, but this time rather than a hive, the box

becomes a window.

(c) "Swarm of flies attacking a sugar cube"

Reasoning: Another version of the above, but this time the title is playing off of flies

attraction to sugar.

(d) "A heavily missed target"

Reasoning: This title provides a bit of a pun as it's hard to imagine seeing the *missed*

bullet holes. It is quite clever and unique, and lies on the high end of this medium

category.

(e) "Ants going to a convention"

Reasoning: This title anthropomorphizes ants by indicating that they are attending a

convention. The viewer can recognize that while this view is aerial it is not

necessarily a view from far above (as it would be if it were titled "People going to a

convention"), and thus the combination of anthropomorphism, scale, and aerial

perspective is quite clever. A frog in captivity

Reasoning: This title gives a clever interpretation of the Droodle using a higher-order idea of captivity. The hole becomes a breathing hole in a box in which a frog is held captive and is trying to get out.

**(4) Prototypic High Titles**

(a) "A spilled box of poppy seeds"

Reasoning: Classic title depicting a dynamic action (spilling) as a still shot.

(b) "Always keep the lid on"

Reasoning: This title is clever variation of the above Droodle. Rather than describing what is happening, the viewer gets a sense of "the moral of the story…" – what can happen (spilled contents) when this bit of advice is not followed.

(c) "Opposites attract"

Reasoning: This title plays upon the juxtaposition of these forms: one is bound, square, and empty; the other is unbounded, random, and full (assuming something unbounded can be full). The author has added an additional layer of abstraction by illustrating their relationship through the common coinage "opposites attract".

(d) "At the Optometrist's office"

Reasoning: This title plays upon a cultural reference to the optometrist's office, where you try to make visual sense of a series of images. The viewer doesn't know if their view indicates passing the eye exam (i.e., does viewing it in this way indicate good or poor vision), which makes this Droodle particularly clever!

(e) "The rock show"

Reasoning: This title suggests an aerial view of a concert in which the dots are people and the box is the stage. A unique and clever interpretation.

## C. Droodle 3
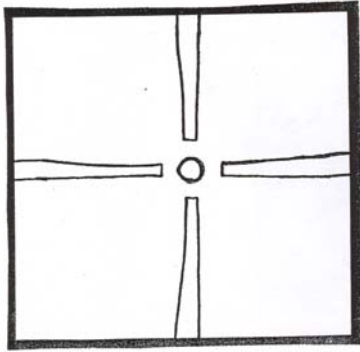


**(1) Prototypic Non-Droodle Titles:**

(a) "Cannons playing pass the chicken"

Reasoning: This title is incomprehensible with this Droodle.

(b) "The Earth as viewed from the bottom of a table"

Reasoning: This title is incomprehensible with this Droodle.

(c) "A ball just released from an airplane"

Reasoning: This title is incomprehensible with this Droodle.

**(2) Prototypic Low Titles:**

(a) "4 anteaters trying to eat a ping pong ball"

Reasoning: This title lacks contextual coherence as ping pong balls do not work well with anteaters (see High example as a comparison). Making the circle a ping pong ball is just additive; that is, the author is just trying to account for all the aspects of the Droodle, but does so in a way that does not work.

(b) "A four-square playing court"

Reasoning: This title almost works, thus it is on the high-end of low. While a good attempt was made, it does not make sense of the gap between the four bars and the circle.

(c) "Frodo getting attacked by the 4 enemies"

Reasoning: This title is an attempt to put a more interesting twist on the typical interpretation of this Droodle, but it fails to produce a successful Droodle. While the circle successfully represents a person in the center ("Frodo"), the "4 enemies" are not represented clearly – are they guns? Swords? Or abstract representations of Ring Wraiths?

(d) "A key hole"

Reasoning: This title offers a perspective that is more unique than the aerial perspective typical of this Droodle, but lacks coherence as "a key hole".

(e) "4 guys playing pool at once"

Reasoning: This title provides a typical interpretation of this Droodle, but in doing so fails to have contextual coherence or any higher-level notion to explain the four players (see Medium prototypic Droodles for a comparison).

**(3) Prototypic Medium Titles**

(a) "The assassin locks his target into the snow field"

Reasoning: This title makes use of the white space in a creative way ("snow field"), as well as using all components of the Droodle in a cohesive way (as crosshairs). This title is on the high-end of medium.

(b) "Top of the patio table"

Reasoning: This title shifts the perspective to an aerial view. It is not clear if the author also intended a zoomed-in perspective (and the edges of the table are not in view) or if the edges of the table are intended to be represented by the drawing area boundary.

(c) "Pool-player standoff"

Reasoning: This title plays on the more abstract notion of a "standoff" while overlaying in a clever way with pool-players. While not plausible (at least not in our understanding of pool) to have four players "standing off" at the same time, this title has a cleverness and coherence that is appealing.

(d) "An incomplete group of cubicles"

Reasoning: This title shifts the perspective to an aerial view and makes a pun with a reference to the common notion of cubicles as bounding a space with walls. In this case, they are incomplete since they do not connect to the center upright.

(e) "Guy in middle of a flawed firing squad"

Reasoning: This title provides an interpretation that is quite funny if it were played out (well, funny in a slap-stick way). The title has a certain linguistic elegance ("flawed firing squad") that accurately conveys the problem with this firing arrangement.

**(4) Prototypic High Titles**

(a) "The four-sided floppy disk"

Reasoning: A big gestalt shift as this author incorporates the drawing area border as edges of the floppy disk. However, we couldn't figure out the "four-sided" reference and if that relates (and how) to the four bars in the drawing. Overall the gestalt shift overrides the ambiguous aspects of this Droodle, but would be on the low-end of high.

(b) "A broken fan"

Reasoning: This title also incorporates the drawing area border into the Droodle. In this case the box becomes a box-fan. This title provides more coherence than the previous title as the four bars represent the fan blades and their disconnection from the circle accounts for "broken".

(c) "A windmilling [sic] wing close up"

Reasoning: This title provides a zoomed-in perspective of the Droodle, much like the "broken fan" Droodle above.

(d) "Top of a baseball cap"

Reasoning: This title provides a zoomed-in perspective that quite cleverly reveals itself as a top of a baseball cap. The scale is also fairly accurate (to human scale) which makes this Droodle work in a very realistic way.

(e) "4 anteaters waiting for ants to come out"

Reasoning: This title interprets the Droodle in a typical way by using the four bars as anteater noses. However, what really works with this Droodle (and why it is a high) is that there is a real coherence (context and plausibility) *and* that the author has made the circle a hole rather than an object itself, and conveyed the idea of hidden entities (ants) beneath the hole.

**D. Droodle 4**
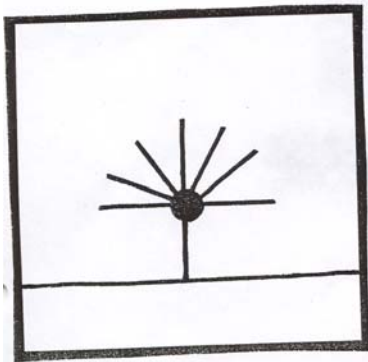


Note: This Droodle pulls strongly for a horizontal orientation because of the horizontal line, thus if the title reveals a different orientation or perspective (and it is coherent), it will likely bump up the Droodle into a higher category.

**(1) Prototypic Non-Droodle Titles:**

We did not identify any Non-Droodles in the coding development portion of the data, except those Droodles without titles.

**(2) Prototypic Low Titles:**

(a) "Upside down peacock"

Reasoning: While the reference to a peacock is intriguing, this title is not coherent in explaining the features of the Droodle (i.e., the "upside-down" didn't work effectively and doesn't make sense contextually).

(b) "An awkward looking flower"

Reasoning: The use of an adjective ("awkward") to explain the Droodle is not compelling. It seems to be an uncreative and simple strategy to attempt to explain what the participant cannot otherwise explain.

(c) "Punk rock golf tee"

Reasoning: This title lacks contextual coherence; that is, it is not realistic. This is quite similar to the title above in that it is using "punk rock" to attempt to explain why a golf tee would have lines radiating from it. Furthermore, the cultural reference to punk rock is obvious and therefore not interesting.

(d) "Rising"

Reasoning: This title seemed to be attempting something quite creative and clever (and is of the form of a successful Droodle title), but we couldn't decipher exactly what was "rising". It is somewhat incumbent upon the title to provide enough information to understand the Droodle.

(e) "A windmill"

Reasoning: This title lacks coherence with the Droodle as it fails to explain why there are only blades on one side of the "windmill". A good attempt, but is not successful.

**(3) Prototypic Medium Titles**

(a) "Seven straws in a drink"

Reasoning: This title gives a unique and coherent interpretation of the Droodle, but it is not particularly surprising or clever.

(b) "Bad hair day"

Reasoning: This title plays nicely on a cultural reference and does so with a more abstract telling. In other words, they are drawing upon the notion of bad hair day

while letting the viewer fill in the details (e.g., that one's hair sticking out in various directions could constitute a bad hair day).

(c) "Profile of a guy with a Mohawk"

Reasoning: This title is a rather obvious interpretation that is made more successful by orienting the viewer to the perspective ("profile"), thus increasing coherence.

(d) "Sillouette [sic] of peacock"

Reasoning: This title provides a coherent interpretation of a peacock (compared to the Low version), while allowing the viewer to fill in the details of the silhouette in a way that works (e.g., if is viewed from the front or back, interpreting the legs).

(e) "A punk submarine taking a peak"

Reasoning: While this title makes use of "punk" to explain the radiating lines (which normally is not too clever), it is clever in that it breaks set by making the horizontal line the water and thus the submarine is occluded. While this strategy was commonly used in the Modified Droodle, it is fairly unique in the Droodle task.

**(4) Prototypic High Titles**

(a) "Whoopi Goldberg being scared while in bed"

Reasoning: This title puts a twist on the horizontal line, making it the top edge of a blanket on a bed. It is coherent and plays on a cultural reference.

(b) "Upside down room with chandelier"

Reasoning: This title implies a 180° mental rotation of the image that changes the orientation of the drawing. A unique interpretation of the Droodle.

(c) "Bad hair day for someone walking up a hill"

Reasoning: This title explains the horizontal line in a creative way, that is, it is the ridge of a hill as someone is walking up. It is certainly more coherent and creative than "Bad Hair Day."

(d) "Unsmiling cat face"

Reasoning: This title reveals that the drawing is a zoomed in picture of a cat's face (nose, whiskers, mouth), but that the cat is unsmiling and thus the straight rather than curved line we normally associate with cat's faces. This drawing has a bit of incoherence as a cat's whiskers don't truly come off the nose as depicted in this Droodle, but the other features of this Droodle override this minor incoherence.

(e) "A train switching station" (low-end of High)

Reasoning: This title provides an aerial view, thus overcoming the strong pull for horizontal orientation. It explains the drawing in a creative way, but lacks a certain coherence as we could not imagine a train being able to make a 90° turn into the switching station.

## PART 2: MODIFIED DROODLE CREATIVITY TASK

**Introduction**

  The Modified Droodle Creativity Task asks participants to draw a Droodle and generate a title that explains the drawing in a surprising way.  This task provides an open-ended problem with no single solution and, as such, potentially assesses "problem-solving processes that more closely approximate genuine creativity" (Simonton, 2003, p. 486).  The Modified Droodle Creativity Task involves a composition of both figurative and linguistic creativity as it draws upon people's ability to create a simple image or figure and explain it in a witty and surprising way.  Other tests of creativity have similarly assessed the creation of images and language.  For example, the Picture Construction Test, which is part of the Minnesota Test of Creative Thinking, involves free-hand drawing and titling of the drawing (Torrance, 1962).  In addition, as well as creating the clever plot titles task described in Part 1, Guilford also developed a drawing task in which participants produced symbols to represent activities or objects (Torrance, 1962).

**Task Directions**

  "For this task we would like you to invent the best Droodle you can.  Remember, a good Droodle is a picture made up of simple shapes that can be interpreted in different and surprising ways.  Your Droodle should also have a title or one sentence description that says what you intend it to be.  There will be a space provided on the next page for your drawing and description. You will have 7 minutes."

  Notes:  (1) See Appendix A for complete task materials.  (2) The Droodle task is given prior to the Modified Droodle as it serves as an informal training with Droodles necessary for completion of the Modified Droodle Creativity Task.

**General Notes**

(1) We are interested in the overall relationship between the drawing in the Droodle and the title, rather than a particular aspect of the drawing or the title. For example, consider the degree to which there is an element of surprise when understanding the relation between the drawing and title.

(2) If there is more than one title on the line provided OR more than one title written in the practice space provided, score the Droodle with the "best" of the titles provided.

(3) If a Droodle contains distasteful content (e.g., racist, sexist, etc.), do not consider the distastefulness of such content in coding the Droodle. In other words, it is possible for one to make a distasteful reference or include questionable content while successfully completing the Droodle task based on the criteria below.

(4) If a Droodle resembles a *Classic Droodle* from Price, Lovka, and Lovka (2000), code the Droodle as if the participant had no previous exposure to Droodles. We did not account for participant's previous external experiences with Droodles, thus we will code each Droodle with the assumption that participant's do not have previous external experience with Droodles. Likewise, if a Droodle looks similar to an *Example Droodle* (i.e., from the examples provided in the task instructions), code the Droodle as if the participant had constructed the Droodle themselves. We are not accounting for internal task experience as strategies used in the Example Droodles are common to Droodles, in general, and more obvious copying of Example Droodles happened rarely in our sample.

(5) Google Clause: If a participant makes reference to an event, person, place, etc. in their Droodle that is unknown or unfamiliar to the Coder, the Coder may use Google (or other

internet search engines) to find information so that they are able to understand and thus code the Droodle.

## Consensus Coding Methods

The coding categories were developed from half of the data. Five prototypic Droodles were selected for each coding category (high, medium, low, non-droodle) from the same half of the data by consensus during coding manual development. Then three different coders ("Consensus Coder") were trained in the coding process. Consensus Coders first coded all of the Modified Droodle data independently, and then reached consensus together for any Modified Droodle on which they did not independently agree. It was possible during the consensus phase that Consensus Coders continued to "see" a Modified Droodle differently. In such cases, when unanimous consensus could not be reached, the dissent was indicated (e.g., 2 of 3 Consensus Coders agreed that Modified Droodle X received a "Medium" code). The consensus codes were used as the final (official) codes.
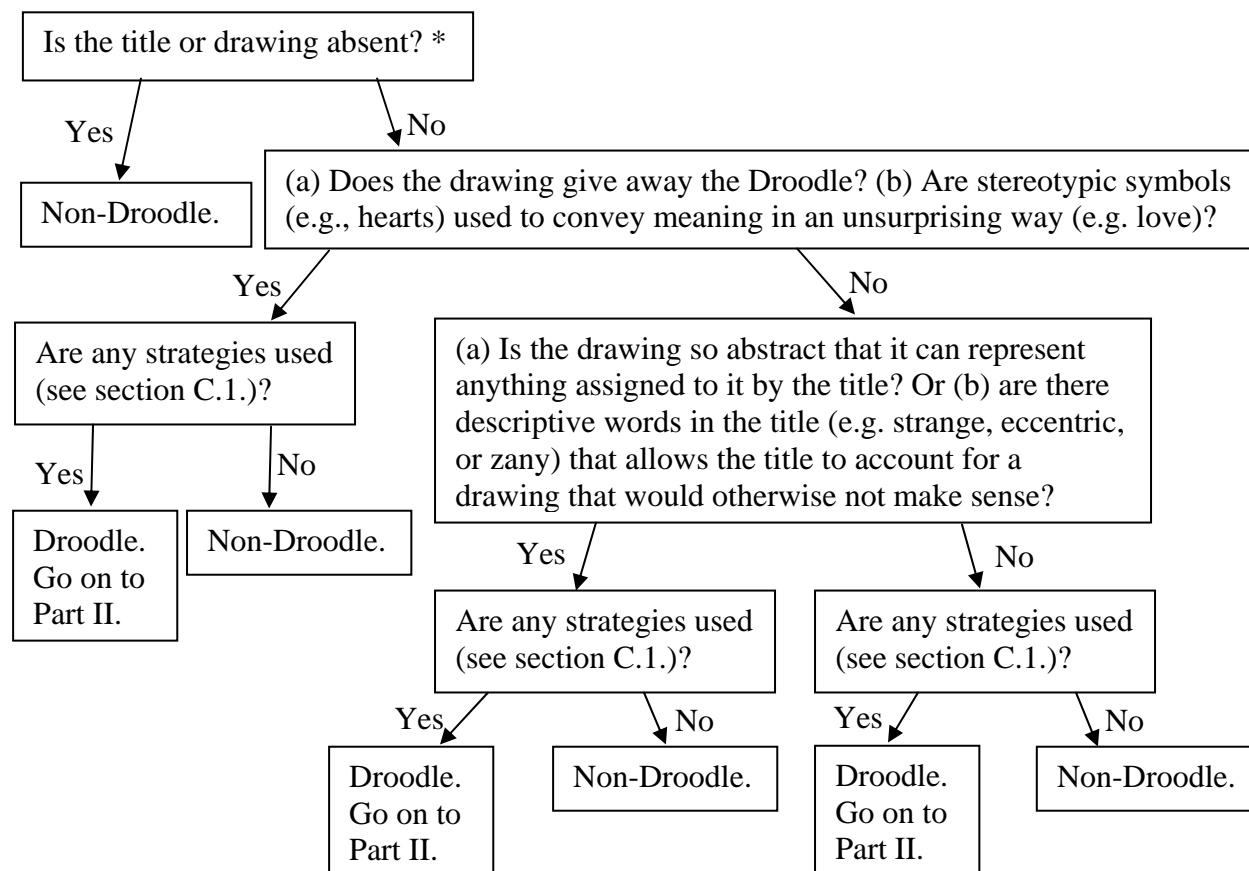
## General Coding Process

There are two parts to the coding process: Section 1 involves determining if the participant's Modified Droodle meets our definition of a Droodle. If it does not, it is coded as "Non-Droodle". If the Modified Droodle does meet our definition of a Droodle, then proceed to Section 2 in order to code the Modified Droodle as a Low, Medium, or High Droodle. The coding processes for Sections 1 and 2 are explicated below. Note: for both Sections 1 and 2, use the sort method of coding; that is, sort the data set into piles of Non-Droodle, Low, Medium, or High Droodle. Then, double check the sorting of the piles before recording the codes.

**Section 1.  Droodle/Non-Droodle Distinction**

**A.  Coding Process**

1.  Using the flow chart of questions below, determine whether or not the subject's drawing is a Droodle.

2.  Note that once the first question has been answered, all subsequent questions lead to the final determinant; that is, if the drawing uses one of the identified Droodle strategies. The questions that lead to this final question are important in that they help orient the Coder to the drawing, which will aid in category coding in Part II (but are not explicitly considered in Part II).

## B. Droodle or Non-Droodle Flow Chart

Is the title or drawing absent? *

Yes → Non-Droodle.

No → (a) Does the drawing give away the Droodle? (b) Are stereotypic symbols (e.g., hearts) used to convey meaning in an unsurprising way (e.g. love)?

Yes → Are any strategies used (see section C.1.)?

Yes → Droodle. Go on to Part II.

No → Non-Droodle.

No → (a) Is the drawing so abstract that it can represent anything assigned to it by the title? Or (b) are there descriptive words in the title (e.g. strange, eccentric, or zany) that allows the title to account for a drawing that would otherwise not make sense?

Yes → Are any strategies used (see section C.1.)?

Yes → Droodle. Go on to Part II.

No → Non-Droodle.

No → Are any strategies used (see section C.1.)?

Yes → Droodle. Go on to Part II.

No → Non-Droodle.

* NOTES: (1) If there is no title on the title line, but there are one or more titles in the scratch area, the drawing is considered to have a title; (2) Choose the best title if more than one title is given; and (3) If there is both a title on the title line and title(s) in the scratch area, only use the title on the title line.

## C. Prototypic Non-Droodles
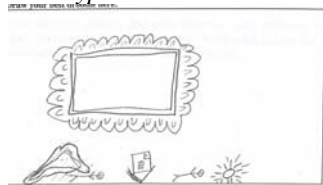
*Prototypic Non-Droodle*



Title: "A picture after an Earth Quake"

*Prototypic Non-Droodle*
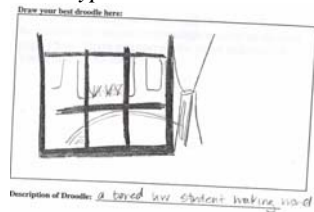


Title: "Result of Droodler's Block; no pretty"

*Prototypic Non-Droodle*
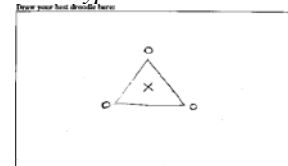


Title: "The animals getting ready to fight for food in the center" and "The new galaxy found to have 3 planets circling in a triangular path around the center of the universe"

*Prototypic Non-Droodle*



Title: "A bored UW student working hard"

*Prototypic Non-Droodle*



Title: "Three villager pointing towards there [sic] kill, a Zebra"

## Section 2. Modified Droodle Coding

**A. Coding Process** – Once the drawing has been established as a Droodle (Part I), use the following coding process to determine which Droodle Category to code for each Droodle.

    (1) Initial Reaction – Determine your initial reaction to the Droodle. Did you have an "aha" (gestalt experience), "aha, but…" (awkward gestalt experience), or "blah" (no real gestalt experience) response to the Droodle?

    (2) Pattern Matching – Determine if the Droodle is similar to the prototypic Droodles provided for each coding category.

        (a) "Aha" Response – Match the Droodle in terms of the "aha" experience. Does the Droodle elicit a similar gestalt ("aha", "aha, but...", or "blah") response as any of the prototypic Droodles?

        (b) Drawing Style – Match the Droodle based on similar strategies or styles (e.g., abstractness or literalness – see below), rather than a literal match (i.e., this Droodle looks *just like* this prototypic). Does the Droodle have a similar style or strategies as any of the prototypic Droodles?

    (3) Categories and Rationale – Consider the strategies used in the Droodle (see Section C). Use the categories to create a rationale for your initial reaction and *not as a way of challenging your initial reaction.*

(4) Overall Assessment – Based on the above process, what is your overall assessment of the Droodle? Code High, Medium, Low.

## B.  Coding Categories

**(1) Low** – refers to Droodles that used at least one of the identified strategies and also include at least one of the following: (a) are literal, in that they are drawn in a literal manner and have a title which describes what has been drawn; (b) have symbolic representation between the title and the drawing (i.e., the drawing somehow (however poorly) looks like or resembles what it is supposed to represent); (c) use stereotypic symbols (e.g., hearts) used to convey meaning in an unsurprising way (e.g., love); or (d) attempts to do something clever with a strategy without success. When viewing the Droodle, the response is more of a "blah".

*Prototypic Low – Lower Boundary:*

Title: "water faucet w/ running water"

*Prototypic Low*

Title: "Golf tee in the ground"

*Prototypic Low*

Title: "Obese swimmer about to be devoured by a shark"

*Prototypic Low*

Title: "A view of a sniper aiming at some guy's head"

*Prototypic Low – Upper Boundary*
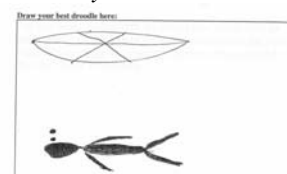
Title: "Lay-person's eyes popping out at a ufo"

**(2)  Medium** – refers to Droodles that (a) are somewhat literal (see Low) but are successful in using a Droodle strategy or (b) somewhat abstract (see High) and have success in applying a Droodle strategy, but lack the luster or coherence of a High Droodle. When viewing the Droodle, the response is more of an "aha, but…"

*Prototypic Medium –*
*Lower Boundary*
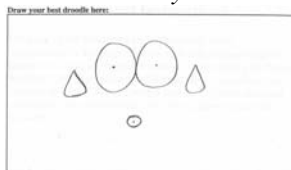


Title: "Ghost who forgot his sheet"

*Prototypic Medium*



Title: "Supermodel"

*Prototypic Medium –*
*Upper Boundary*
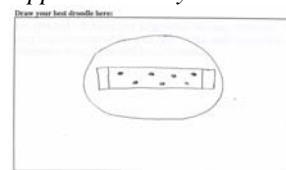


Title: "Bird's eye view of a watermelon on a plate"

*Prototypic Medium*
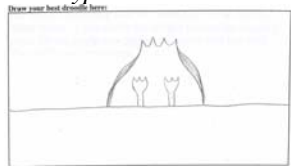


Title: "Duck fishing for food"

*Prototypic Medium*
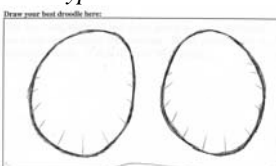


Title: "Aunt Mae's nostrils"

**(3)  High** – refers to Droodles that (a) are abstract, meaning that they make use of abstract drawings, (b) successfully use the Droodle strategies, and (c) have a certain sophistication or surprise. When viewing the Droodle, the response is more of an "aha!"

*Prototypic High – Lower*
*Boundary*
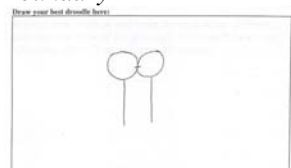


Title: "First kiss"

*Prototypic High*
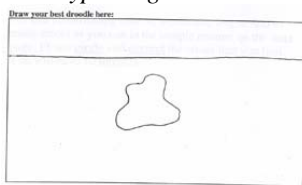


Title: "A cliff-diving amoeba"

*Prototypic High*



Title: "Worframs [sic] antithesis (mathmatics [sic] guy"

*Prototypic High*



Title: "Scuba divers below"

*Prototypic High*



Title: "The belly of a stick figure"

**C. Droodle Strategies and Coherence**

1. Droodle Strategies

1.1. Occlusion – refers to a strategy in which shapes represent something behind something else.

1.2. Horizon Making – refers to a strategy in which a straight line is used to create a horizon in the drawing. The line is often horizontal, but may also be drawn at an angle. The horizon line is used to indicate that the subject of the drawing is (a) behind the horizon (e.g., "duck fishing for food"), (b) in front of the horizon (e.g., "a cliff-diving amoeba"), (c) on top of the horizon (e.g., "golf tee in the ground"), or (d) under the horizon (not part of our prototypic data).

1.3. Orientation Change – refers to a strategy in which the Droodle viewer's perspective is changed by way of a change of orientation of the Droodle viewer to the subject of the Droodle (e.g. from above, side, or below). NOTE: Some titles explicitly reveal the orientation, while others must be figured out by the Droodle viewer in order to understand the Droodle.

1.4. Figurative Exaggeration – refers to a strategy in which the size or dimension of shapes represent meaning. In "Supermodel", the single straight line is an exaggeration (by making thin and rail-like) of the shape of supermodels. (Note: Cultural Reference is also used as a strategy in this Droodle.)

1.5. Figurative Pun – refers to a strategy in which an aspect of the drawing is a play on words with a literal representation of concept, phrase, or expression that has an alternative meaning. In "lay-person's eyes popping out at UFO," two puns are used in slightly different ways: "lay-person" is represented literally with a person horizontally and the expression "eyes popping out" is represented literally (as an

action) with two dark circles above the head.  In "Two bugs making love in the spring", "spring" is represented literally as a spring coil which is a pun on Spring, the season.

1.6. Anthropomorphizing – refers to a strategy in which the subjects or objects of the drawing are endowed with human qualities or characteristics.  In "Worm taking date to dinner", the drawing is very figurative (i.e., it is easy to recognize the apple and the worm), but the surprise comes from the combination of a worm doing a very worm-like behavior (eating an apple) with an anthropomorphized behavior ("taking date to dinner").  Similarly with the clam in "Clam with Buck Teeth", the clam's characteristics (shape) are combined in an amusing way with a human characteristic ("buck teeth").  In "A cliff-diving amoeba", an amoeba is endowed with the human behavior of "cliff-diving." NOTE: Pretense is a part of anthropomorphizing, but pretense alone is not a criteria (see e.g., "A picture after an earthquake").

1.7. Cultural Reference – refers to a strategy in which the drawing represents a cultural value, trend, or knowledge of a cultural icon or object in an ironic or humorous manner.  "Supermodel" is a cultural reference that supermodels are very thin and rail-like. (Note: Figurative exaggeration is also used a strategy in "Supermodel".)

1.8. Perspective Change

    1.8.1. Unique Perspective – refers to a strategy in which the Droodle viewer takes on an unusual vantage point.  It is often the case that the perspective is unique because it is viewed through a restricted portal (e.g., window in an armored truck, the opening in a beer can, from the inside of someone's mouth).

1.8.2. Subject's Perspective – refers to a strategy in which the Droodle viewer takes on the perspective of one of the subjects in the Droodle. Code stringently here; there must be two subjects in the Droodle (either explicit or implied).

1.8.3. Partial View – refers to a strategy in which the visual space is used in a clever way to convey a portion of a larger scene (the larger scene is made apparent in the title).

1.9. Interpretation Twist – refers to a strategy in which the drawing is visually pulling on one interpretation (possibly through recognizable, stereotypic, or iconic images), while the title reveals another altogether surprising interpretation.

2. Coherence – refers to drawing which have coherence in terms of drawing-title, plausibility, and/or context.

2.1. Not Coherent

2.1.1. Drawing-Title – refers to a lack of symmetry between aspects of the drawing and the title.

2.1.2. Plausibility – refers to a lack of plausibility of the drawing given the title, or the plausibility is a stretch.

2.1.3. Contextual – refers to a lack of contextual coherence.

2.2. Coherent

2.2.1. Drawing-Title – refers to the symmetry between the drawing and the title.

2.2.2. Plausibility – refers to the plausibility of the drawing given the title.

2.2.3. Contextual Coherence – refers to symmetry between the context of the drawing and the subject matter.

## PART 3: UNUSUAL USES CREATIVITY TASK

**Introduction**

The unusual uses test has long been used as a measure of divergent thinking in creativity research (Torrance, 1962; Eisenberger, Armeli, & Pretz, 1998). The test asks subjects to generate a list of different uses for common objects, such as a tin can, a toy dog, or a book. However, the methods for analyzing the resulting data seem to us inadequate for capturing a robust account of creativity. A central problem in the field has been a tendency to unduly emphasize the number of generated responses as a measure of creative performance, even when those responses reflect the same basic idea (e.g., use a tin can as "a container for peas," "a container for corn," "a container for carrots," etc.). Our goal in this technical report is to describe our new methods for analyzing the unusual uses test.

Our methods emerged from a reconceptualization of divergent thinking itself. Other researchers have characterized divergent thinking in terms of a person's ability to overcome the tendency to fixate on the common use of an object (Finke, Ward, & Smith, 1992). Elaborating on this idea, we identified three factors that contribute to such psychological fixation: (a) the affordances of the artifact's design, including the limits of its physical and structural properties (Kemler-Nelson, Frankenfield, Morris, & Blair, 2000), (b) the conventional use of the artifact in a society (Tomasello, 1999), and (c) the designer's intent (Defeyter & German, 2003).

Participants were given ten minutes to generate as many different uses as they could think of for a tin can. We measured creative performance by comparing the number of responses in which the tin can was not used as a container. In addition, and more substantively, we conceptualized 7 strategies for divergent thinking that we propose contribute to creative performance. As described more fully in what follows, these strategies comprised: (1)

Transformation, (2) Augmentation, (3) Experimental Medium, (4) Proliferation, (5) Pretense, (6)

Symbolic Abstraction, and (7) Characteristic Isolation. A divergent strategy score was

calculated by aggregating, by subject, the number of responses with at least one strategy and

dividing them by the total number of uses.

The Unusual Uses Creativity Task section of the technical report (Part 3) is divided into

two sub-sections: Section 1 is comprised of Container/Non-container Coding and Section 2 is

comprised of Divergent Strategies that further explicate Non-container responses.

**Task Directions**

For this task, think of and write down as many different uses you can think of for a tin

can. Write each use on the following sheet. You will have 10 minutes.

(See Appendix A for complete task materials.)

**Section 1. Container/Non-Container Responses**

**Overview**

This section outlines the scoring approach and application of the coding manual for

container/non-container responses. The container score is binary which means that the

responses must be placed in either the container or non-container category. Container

responses refer to responses in which the tin can functions only as a container. By function

we mean the action for which a tin can is specifically used. Non-container responses include

all uses other than as a container. We have provided several examples to assist in the

comprehension of the use of this manual in coding responses to the unusual uses test. Please

note that throughout this coding manual the word "use" to refers to each individual response offered by a subject.

**Container/Non-Container Codes**

**A. Container.**  Refers to responses in which the tin can functions as a container.

  **General Notes**

  (1) Code responses as container that partially specify that the tin can is functioning as a container (e.g. "for tuna", "carry water", "putting money in").  Words like collect, for, in, into, and carry may indicate that the can is functioning as a container.

  (2) Code responses as container if the response only lists something that the tin can may contain (e.g. "winter used vegetables", "flower arrangements").

  (3) Code responses as container responses if the tin can "cages" or "holds" an animal (e.g. "cricket cage", "holding spring snakes").

  (4) Do not code responses as container if the tin can (a) functions as a container in order to serve another purpose (e.g. "putting different levels of water to create music notes"); (b)  holds something abstract (e.g. "rubbing it to find the genie inside", "container for dream" [hypothetical]); (c) functions as an abode or habitat (e.g. "shelter for a mouse", "a slug habitat", or  "houses for mice"), as the occupant is considered to be free to leave and thus not contained.

  (5) If a different function is not specified then the default code is container.

  **Prototypic Examples of Container Responses:**

  (1)  toothbrush holder

(2)  miniature trash can

(3)  cup

(4)  use it as a chew spitter (sic)

(5)  piggy bank

(6)  candle hold

(7)  bucket

(8)  decorative gift container (decoupage)

(9)  vase for flowers

(10) beer mug

B. **Non-Container.**  Refers to responses in which the tin can functions as something other than a container.

**Prototypic Examples of Non-Container Responses:**

(1)  make a small fort for your Gl Joes

(2)  as a slug habitat

(3)  music shaker/instrument

(4)  plant a tree

(5)  measure snowfall

(6)  chimney starter for coals

(7)  throw rocks or marbles in it

(8)  lanterns, poke holes insides

(9)  collect memories

(10) shelter for a mouse

**Section 2.  Divergent Strategies.**

**Overview**

This section outlines the scoring approach and application of the coding manual for divergent strategies utilized in non-container responses.  Each strategy represents a different way of engaging in divergent thinking and is explicated in the criteria below.  Code the applicable divergent strategies for all of the non-container responses from above.  Then calculate a divergent strategy score for each subject by aggregating the number of responses with at least one strategy and dividing them by the total number of responses per subject.

**General Notes**

(1)  Multiple coding is possible for a given use, but it is not possible for the same portion of the response.  Consider for example, the following response: "with the bottom punch out and a bunch together you get arm armor." Two divergent strategies are utilized – transformation ("bottom punch out") and proliferation ("a bunch together") – in order to create the final use.  Note that multiple coding is additive; that is, each portion of the response is only coded once, but that more than one portion is available for coding resulting in two codes for this example.  Additional examples are provided in the table below.

| Response | Transformation | Proliferation | Augmentation |
|---|---|---|---|
| "recycle and use as part of a car" | "recycle" | – | "part of a car" |
| "paint it & make it a " Mr. Tin Man" by creating extra parts made from other tin cans" | – | "extra parts made from other tin cans" | "paint it" |
| "lanterns, poke holes in sides" | "poke holes" | "lanterns" (pl.) | – |

(2) Our standard conception of the tin can is as an empty tin can with the top lid removed, as illustrated in the figure below. Note: participants were not provided with an image of a tin can during the task. We have provided it here for illustrative purposes only.
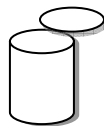


**A. Transformation.** Refers to the creation of a new use of the artifact by making a significant alteration of the physical structure of the tin can.

**Notes**

(1) Code only significant physical transformation of the tin can, including cutting, puncturing, melting, punching holes in, or using a part of the tin can after such a transformation.

   (a) Do not code a response as a transformation if it is only a slight alteration of the surface of the tin can (e.g. "paint it & make it a 'Mr. Tin Man'", "polish it, emergency flash /signaling", "sanding it to make a mirror" [hypothetical]).

(b) Do not code a response as a transformation if the tin can is only added to without a significant change in its structure (e.g., "useful as diving targets when painted and weighed down w/ concrete"). If the tin can is only added to it should be coded as an augmentation (see below).

(2) Do not code uses as transformation which employ only one top lid as a common conception of the tin can involves the tin can without the top (see General Note 2).

(a) A response using the word "lid" refers to the top of the tin can. If the use includes one lid, the can is not considered to be significantly altered unless the removal of the lid is specified (e.g., "store pencils (cut off lid)"). In addition, use of the lid as a tool is not considered a transformation unless removing the lid is specified in the response (e.g. "the cut out top as a way to cut meat and other things").

(b) A response using the word "lids" refers to the top and bottom lids. The use of two or more lids constitutes a transformation (e.g. "use lids as x-mass tree decorations").

(c) The use of a specific part of the tin can (other than the top lid) implies a transformation *only if* the specific part can be used as specified only if the tin can is transformed (e.g. "make a throwing star out of the bottom"). In other words, do not code a use as transformation if the part can be used without changing the physical structure of the tin can (e.g. "as a knife if has sharp edges", "wash board (if has ribbed sides)").

(3) Only code a use involving recycling or destruction as transformation if the recycling/destruction is a means to an ends (e.g. "melt down to make statue"), but not

if recycling/destruction is the ends of the transformation (e.g. "melt down and

recycle", "smashing it").


**Prototypic Examples of Transformation**

(1)  "melt down to make statue"

(2)  "Frisbee (if you flattened it)"

(3)  "cut into strips and added to fences as a bird repellant"

(4)  "make a throwing star out of the bottom"

(5)  "chop it up, shrapnel"

(6)  "a watering can (with holes added)"

(7)  "knife = trim lid"

(8)  "with the bottom punch out and a bunch together you get arm armor"

(9)   "use the lids as ornaments"

(10) "the cut out top as a way to cut meat and other things"


B.  **Augmentation.**  Refers to the creation of a new use of the artifact by (a) enhancing a

physical quality of the tin can, (b) adding an object to the tin can, (c) adding the tin can to

something else or (d) creating structural unity out of two or more non-conjoined tin cans.

**Notes**

(1)  The new use created by the augmentation must be specified.

(2)  The response must specify either (a) how the tin can is enhanced (e.g. "decoration

when painted", "roller for hair (heat and use as curling iron)"), (b) what is added to

the tin can (e.g. "chime (attach a string on, hang it)") or (c) what the tin can is added

to (e.g. "flotation for a raft").  Phrases like "part of", "added to", and "item in" may indicate that the tin is being used as a part of something larger.

(3)  Code uses as augmentation when the augmentation is partially specified (e.g. "string telephone", "as a noise maker (tied to back of your ear)").  In other words, "hanging" or "tying" the tin can requires adding a string.

(4)  Code the addition of heat as an augmentation only when the addition of heat is specified in the response (e.g. "roller for hair (heat and use as curling iron)"), but not if the addition of the heat is implied (e.g. "cook stew over fire").

(5)  The word *added* does not always indicate an augmentation (e.g. "a watering can (with holes added)").

(6)  Some augmentations are pictorially represented.  Code a response for augmentation if the response contains a picture illustrating the addition of an object.

(7) Structural unity entails using tin cans in conjunction to create a new use (e.g. "as street soccer goal posts").  In other words, it is a case of *many* tin cans serving *one* use (e.g. "with the bottom punch out and a bunch together you get arm armor").  Do not code a response as an augmentation if the use could just as easily be applied to a single tin can (e.g. "games you need to shoot them") even if more than one tin can is specified in the response**.**  In other words, augmentation does not involve each tin can serving the same use at the same time (e.g. "as markers for a trail").

**Prototypic Examples of Augmentation**

(1)  "useful as diving targets when painted and weighed down w/ concrete"

(2)  "putting different levels of water to make music notes"

(3) "hammer (attach a piece of wood)"

(4) "chime (attach a string on, hang it)"

(5) "decoration when painted"

(6) "polish it, an emergency flashing signal" (addition of a physical quality)

(7) "flotation for a raft"

(8) "part of a steam roller"

(9) "as wheels for a car"

(10) "base for mold"

C. **Experimental Medium.** Refers to the creation of a new use of the artifact by actively exploring, testing hypotheses about, or seeking information regarding the physical world. The tin can is used as an experimental medium when a subject performs an action on the tin can in pursuit of information about its consequences or uses it as a means of investigating or witnessing of natural phenomenon.

   **Notes**

   (1) Code uses as experimental medium if the response uses the can (a) as a way to explore some natural process even if there is no explicit hypothesis (e.g. "put it on water and watch it float like a boat" or "throw in a fire to watch it explode"); (b) to answer or demonstrate a hypothesis about natural laws; (c) as a tool/device to gain information about natural phenomenon (e.g. "rain/snow gauge (to see how much rainfall there was)") or as a tool/device used in scientific experiment (e.g. "culture dish"); or (d) to create an invention (e.g. "creating a small invention") as the inventive

process requires making hypothesis about and exploring the natural properties of the tin can.

(2)  Do not include responses that use the tin can as a tool if the tool is not used to gain information about the consequences of an action or natural phenomenon (e.g. "measuring cup").

(3)  Code uses as experimental medium which specify the type of information being sought or the type of analysis (e.g. chemical analysis).  Process alone is not enough to indicate experimental medium responses (e.g. "cut the ends off and make a telescope"), unless the process is oriented towards discovering information or testing limit of natural phenomenon (e.g. "make a giant tower w/ lots of cans see how high you can get").

(4)  Responses presented in a question format may not necessarily be postulating a hypothesis (e.g. "can be pounded flat and used for something (some sort of decorating?)").

(5)  Do not include responses if the tin can is used for collecting or containing items, unless the tin can is being used a tool measuring natural phenomenon (e.g. "snow gauge").

(6)  Words like "to test" or "to see if" may indicate the response is testing a hypothesis.


**Prototypic Examples of Experimental Mediums**

(1)  "experiments w/ gravity"

(2)  "see if rusts"

(3)  "experiment device on density"

(4) "exploring the wonderful world of corrosion"

(5) "science experiments"

(6) "make a giant tower w/ lots of cans see how high you can get"

(7) "rain/snow gauge (to see how much rainfall there was)"

(8) "chemical analysis"

(9) "culture dish"

(10) "creating a small invention"

**D. Proliferation.** Refers to the creation of a new use of the artifact by taking the one tin specified in the directions for this task ("*write down as many uses as you can think of for a tin can*") and changing it into many tin cans.

**Notes**

(1) Code uses as proliferation which require two or more tin cans (e.g. "make a giant tower with lots of tin cans"; "dangle a bunch of cans from string to make a wind chime") even if multiple tin cans are not specified, but are necessary for the use (e.g., "tin towers"). Conversely, if it is plausible (and not otherwise specified) that the use is comprised of many small parts of a single tin can, do not code as proliferation (e.g. "making ornaments", "making earnings").

(2) The new use created by the proliferation must be specified.

(3) A plural response does not necessarily indicate proliferation (e.g. "flower arrangements", "bury time capsules with it").

(4) The use of multiple lids does NOT constitute proliferation; rather these should be coded as transformation. While multiple coding is allowed across the response, the same portion of the response may not be double coded.

(5) Proliferations may be pictorially represented. Code a response for proliferation if the response contains a picture illustrating more than one tin can.

**Prototypic Examples of Proliferation**

(1) "useful in creating store displays of stacked cans"

(2) "tin can drum orchestra"

(3) "make a wall with them"

(4) "make stairs for a slinky to walk down"

(5) "tree with several cans"

(6) "put inside walls, creates air space to insulate sounds, like a cinder block"

(7) "dangle a bunch of cans from string to make a wind chime"

E. **Pretense.** Refers to the creation of a new use of the artifact by overlaying subjective mental constructions that involve persona, agency, function, or attributes onto an actual artifact. Pretense is distinct from imagination (which requires that the mental construction has the potential to exist in the external world) and imaginary (which involves the projection of mental constructions into space with no referent object, as in the case of imaginary companions).

**Notes**

(1) Pretense may include an explicit statement of pretense (e.g. "pretense" or "play") (see note 2 below) or implicit pretense ("best friend").

(2) The word "play" does not always imply pretense. Play can be used to refer to (a) a recreational activity (e.g. "play toss with your friends") or (b) the act of manipulating something (e.g. "as a thing to roll and play with").

(3) Reference to a toy does not always imply pretense (e.g. "make toys"). We are interested in the act of pretending (e.g. "a pretend telescope") and not in the act of making toys which might facilitate pretending in others (e.g. "building blocks for kid").

(4) Pretense does not involve using the tin can as a make shift item in place of tools or objects (e.g. "makeshift hockey puck").[1] In a pretense response there is no physical use of the tin can outside the meaning it has to the individual who is engaged in pretending (e.g. "playing with your new tin dog").

   (a) The identity of the makeshift item is clearly indicated to an outside observer as a result of the tin can's new function (e.g. "a make-shift guerro") whereas an outside observer would not be able to understand the pretend function unless he/she became engaged in the pretense (e.g. "best friend", "Putting it under you feet and pretending you are king of the world").

   (b) If the tin can could be modified so that it could possibly be turned into an item by a non-expert adult (e.g. "telescope") and there is nothing in the language

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[1] A make-shift use of the tin can involves substituting the tin can for some other object in a physical manner. When you use a tin can as a make shift entity assimilation takes precedence over accommodation in a physical sense more than in a conceptual one. Pretense involves viewing a physical characteristic of the tin can as a signifier for or

indicating pretense (e.g. "pretend telescope") we should assume that pretense is involved. Note: making a nuclear reactor out of the tin can (e.g. "make a nuclear reactor out of it", "new cell phone" [hypothetical]) would require an expert. Yet, making a phone might not as a makeshift telephone can be made with two tin cans and a string.

(5) Representational toys imply pretense ("make a small fort for you G.I. JOES", "using it in a doll house"). However, non-representational toys do not imply pretense ("building blocks"). Representation may be implied through animation ("finger puppet") or adornment ("fake nose").

(6) Note the distinction between plausible and implausible responses with regard to Pretense. It is implausible to say the tin can could be used as a car, thus it requires pretense in order for such a use to work. Yet, a tin can could be a "toy car" or could be made into a car. Use the following rule in making these distinctions: "x" is pretense because it is not really possible for the tin can to be x; "make x" is NOT pretense because you could make a version of x; "toy x" is NOT pretense because a toy "x" really is a toy "x", where x = car, boat, submarine, etc.

**Prototypic Examples of Pretense**

(1) "rubbing it to find genie inside"

(2) "make a small fort for you G.I. JOES"

(3) "playing with your new tin dog"

(4) "a pretend telescope"

---

representation of another object (e.g. the metallic quality of the tin can might be reminiscent of a robot) and then overlaying the identity of the incited object onto the tin can (e.g. "a robot head").

(5) "best friend"

(6) "dinning table for very small people"

(7) "using it in a doll house"

(8) "midget Jousting Helmet"

(9) "boat for GI Joe" (animation)

(10) "finger puppet"

**F. Symbolic Abstraction.** Refers to the creation of a new use of the artifact by indicating or representing a higher order abstract concept, principle, idea, or class.

(1) Indicator refers to a specific instantiation of an abstract notion. For example [hypothetical], "I saw a tin can this morning so I'm going to have good luck today," where there is a clear abstract notion ("good luck"), but it is still tied to a specific event ("going to have good luck"). Indicators come in the form of: (a) concept (e.g., time "time capsule"), (b) principle (e.g. "a not too symbolic object when inserted into a narrative"), (c) idea (e.g. "found art"), (d) class (e.g. "anagram puzzle source"), (e) transcendent entity (e.g. "save them & pass them onto posterity for antiques road show"), (f) value (e.g. "an over abundant object that adds to the degradation of American landscape + helps to transform our open spaces into landfills. Yuck."), (g) representation (e.g. "claiming a new "art" trend"), and (h) language

(2) Representation refers to a larger abstraction of higher order concepts. For example [hypothetical], "the tin can represents luck," where "luck" is a more general construal of an abstract notion. Embodiment comes in the form of: (a) concept (e.g., "to count", "claiming a new art trend", "model for a circle"), (b) principle, (c) idea (e.g. "to

count"), (d) class (e.g., artifact "artifact for future anthropologists", muse "tin cans inspire art"), (e) transcendent entity (e.g., "religious icon"), (f) value (e.g., personal, convention-transaction "currency/trade"), (g) representation (e.g., "the subject of a painting", "art", "symbolic representation of a tin can"), and (h) language (e.g., spoken "a not so symbolic object when inserted into a narrative").

**Notes**

(1) Responses which use the tin can in a physical way are not symbolic (e.g. "art project medium") unless that physical use is a symbolic expression of something else (e.g. "artifact for future anthropologists" in this case the tin can embodies our culture) or if the can is holding something metaphysical ("collect memories").

(2) Key words like "paradigm", "sign", "concept", and "heuristic"may indicate symbolism responses.

(3) Do not code values that are symbolic or abstract adjectives or descriptors (e.g., "cheap goblet"). Code responses which embody a value like a monetary value (e.g. "currency/trade").

(4) Words like "see it as" are not enough to indicate Symbolic Abstraction. In this case, look at the subject of the response to determine how to code.

**Prototypic Examples of Symbolic Abstraction**

(1) "religious icon"

(2) "can be kicked as a euphemism for dying"

(3) "anagram puzzle source"

(4) "a not too symbolic object when inserted into a narrative"

(5) "the subject for a painting"

(6) "symbolic representation of the tin can"

(7) "currency/trade" – Representation of money

(8) "to count"

(9) "tin cans can be examined as a reflection of the culture in which it was

manufactured"

(10) "can see it as time capsule"

G. **Categorical Reduction.** Refers to the creation of a new use of the artifact by making

sole use of one of the artifact's characteristic categories, including (a) shape (e.g.

cylindrical, round, or circular), (b) composition (e.g. metal, texture, rigidity), (c) weight

(e.g. heavy when full, lightweight when empty), (d) components (e.g. flat ends, ribbed

sides, sharp edges). ) Do not code new uses that involve a wholistic or unified conception

of the tin can (e.g. "a stool" or "a container").

**Notes**

(1) Code a response for characteristic reduction if the use explicitly references one of the

tin can's characteristics (e.g. "trace *circles*", "paper*weight*") without that part needing

to be transformed.

(a) If the specified part is removed from the tin can (or transformed) in order to be

used (e.g. "make a throwing star out of the bottom", "knife = trim lid") then code

for Transformation.

(b) Focusing on a single characteristic like the shape of the tin can (e.g. "telescope")

involves Categorical Reduction, while changing the physical structure of the tin

can in order to make a specific characteristic more accessible involves

Transformation and Categorical Reduction (e.g. "cut out ends and use as

telescope") and should be double coded.  In the previous example, "cut out ends"

indicates a Transformation and "use as a telescope" indicates Categorical

Reduction.

(2) Categorical Reduction responses use the tin can in its current state and not on a

possible (or imagined) characteristic of the tin can (e.g. "a stool if its big").

(3) Categorical Reduction may be partially specified or implied (e.g.  "roll out dough") if

the language in the response focuses on one categorical characteristic (e.g. circular or

cylindrical shape, weight, or metal composition).

(a) Words like "roll", "wheel", "funnel", "shaped", "scrolls", "bracelet", "mold",

"pillars", "or "stencil" imply that the circular aspect of the tin can is being used.

Words like "to hear ocean sounds", and "echoing" are borderline cases to be

included.

(b) Words like "strengthening", "weight", "smash", "doorstop", "balance", "holding

down" or "source of metal" imply weight.

(c) Words like "flash", "texture", "make *tin* man", "recycle" or "conductor" may

imply composition.  Words like "reflector", "mirror", "flash", "melt", "magnet",

"electrolyze", "conductor" and "electricity" may imply the composition of metal

in the tin can.

(d) Words like "sides", "lids", "ribbed", or "edges" may imply that a component of

the tin can is being utilized in the response.

(4) Code responses which use the cradle space in the tin can to serve a function other than container (e.g. "measuring cup", "sand molder", "bee trap", "used to throw dice", "shovel type thing").  Do not include responses which focus on the inside cradle space in the tin can in order to contain things.  See Container coding manual for more explicit instructions about what constitutes a container.   Code responses which utilize the cradled space explicitly (e.g. "used to cut round for biscuits") and not those responses in which the tin can is turned upside down(e.g. "a stool", "walking stilts").

**Prototypic Examples of Categorical Reduction**

(1)  "used to cut round for biscuits"

(2)  "paperweight"

(3)  "trace circles"

(4)  "stencil"

(5)  "medium for electricity"

(6)  "bracelet"

(7)  "roll out dough" – shape

(8)  "to imprint a big circle on your forehead"

(9)  "chop it up shrapnel"

(10) "make tin can into shaped bread"

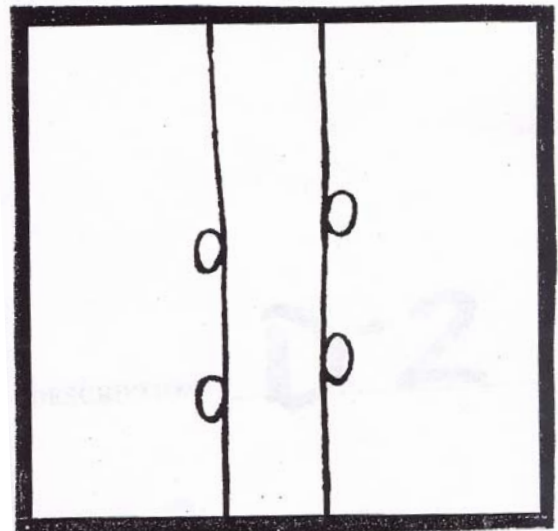# Droodles

For this task you will be asked to provide a creative description of some drawings called Droodles.  A good Droodle has a title (or one sentence description) that makes you look at the drawing in a surprising way.  Below there are some examples of Droodles.  Please spend a minute to familiarize yourself with them.  On the next two pages, you will find four Droodles.  For each one, **decide** what the Droodle is a drawing of and **write** a description to match the drawing.  Remember, the best descriptions have an element of surprise.  You will have 3 minutes.
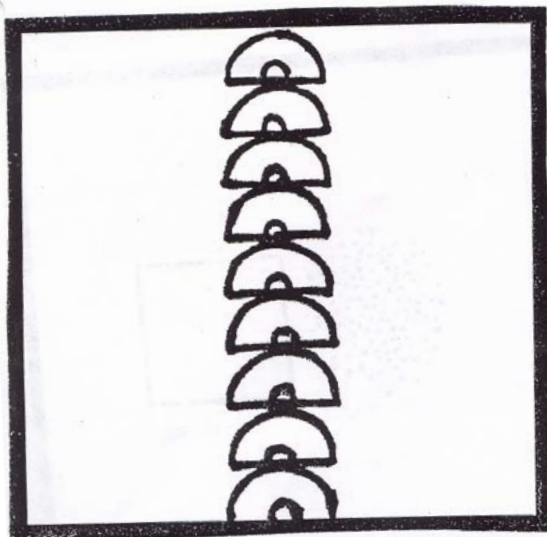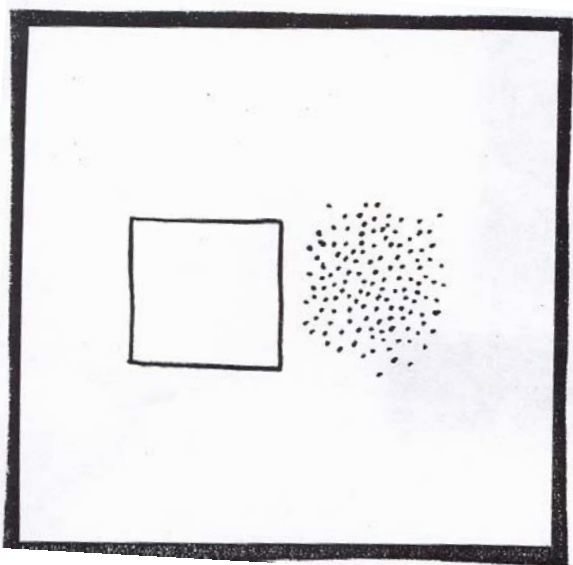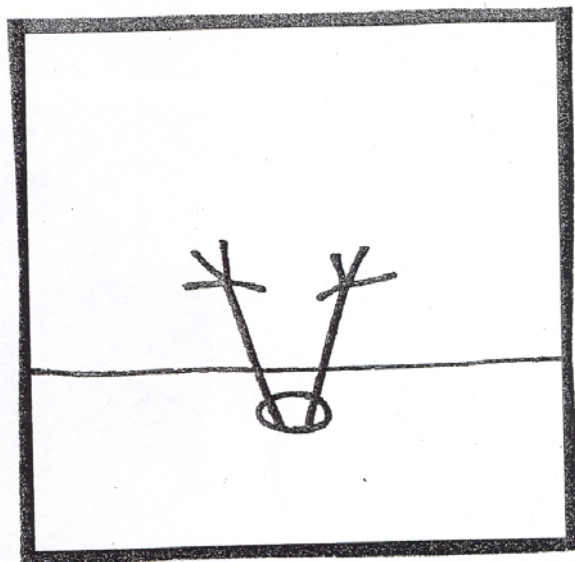


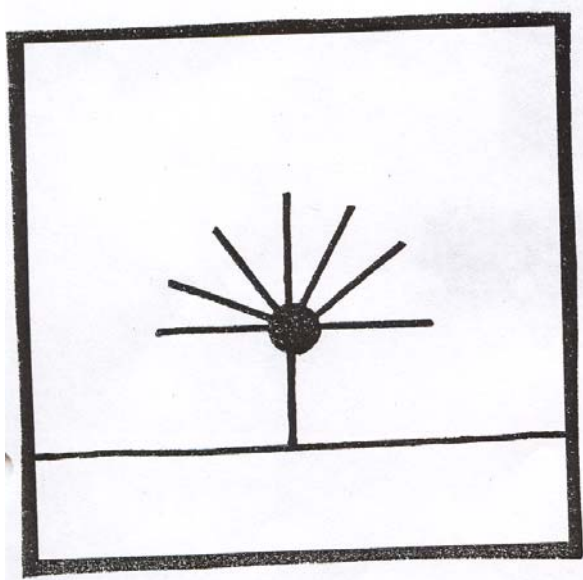IGLOO APARTMENT HOUSE
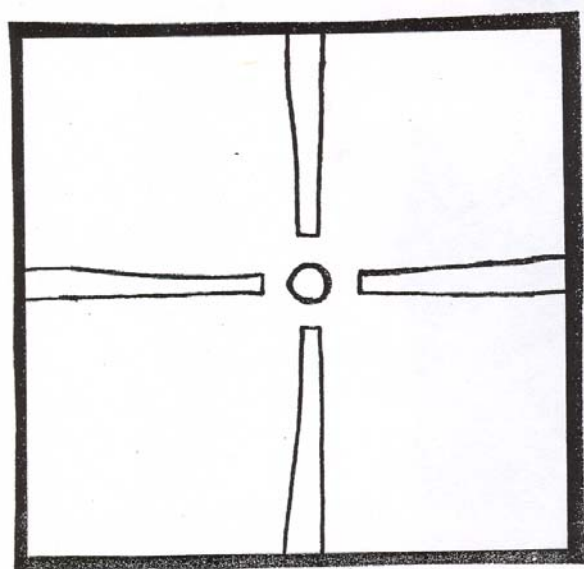


A BEAR CLIMBING UP
THE OTHER SIDE OF A TREE

Example and Task Droodles reprinted from Price, R.,. Lovka, R. A., & Lovka, B. (2000). *Droodles: The Classic Collection.*  Los Angeles, CA: Tallfellow Press.
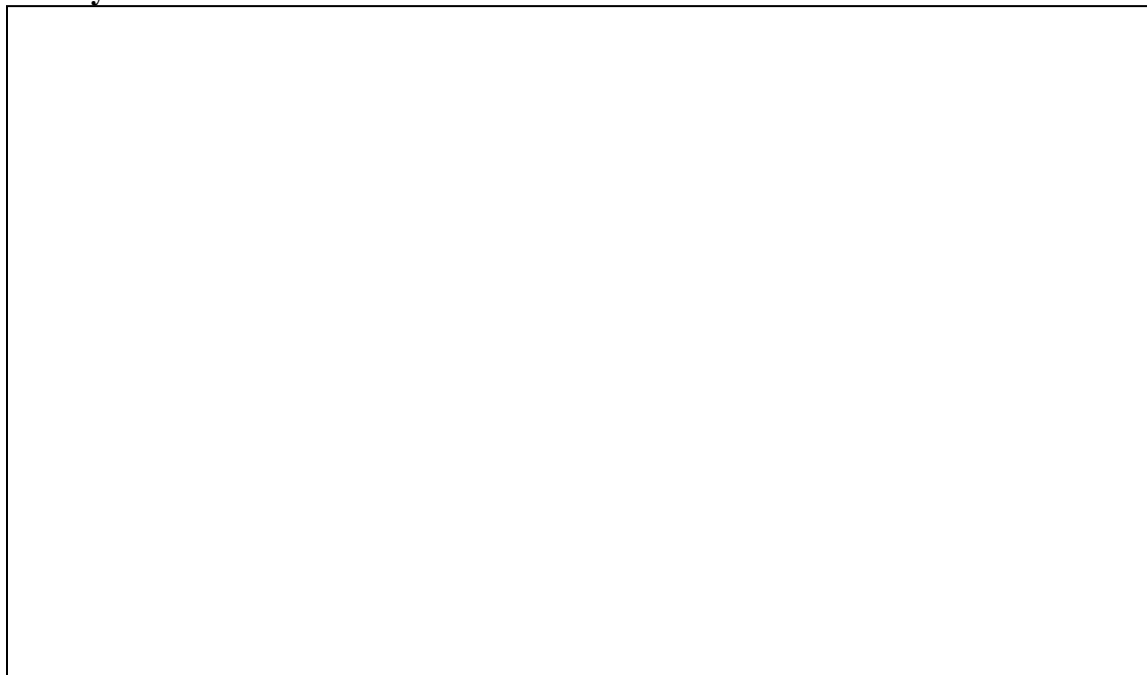
**DESCRIPTION:**_____



**DESCRIPTION:**_____

**DESCRIPTION:**_____

**DESCRIPTION:**_____

# Invent a Droodle

For this task we would like you to invent the best Droodle you can. Remember, a good Droodle is a picture made up of simple shapes that can be interpreted in different and surprising ways. Your Droodle should also have a title or one sentence description that says what you intend it to be. There will be a space provided on the next page for your **drawing** and description. You will have 7 minutes.

**Invent a Droodle:**

**Draw your best Droodle here:**

**Description of Droodle:** _____

**Scratch Area – Sketch your ideas here**

# Tin Can

For this task, think of and write down as many different uses you can think of for a tin can.  Write each use on the following sheet.  You will have 10 minutes.

## Different uses for a Tin Can:

1  _____

2  _____

3  _____

4  _____

5  _____

6  _____

7  _____

8  _____

9  _____

10 _____

11 _____

12 _____

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