

# Left-right spatial orientation in dream reports: Image schemas and interactional dynamics\*

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## Abstract

This study examines the left-right spatial orientation in dreams using a corpus of 60,155 dream reports. The analysis of the concordance lists for the phrases "to my left" and "to my right" reveals that passages (such as doors and staircases) show a statistically significant tendency to appear more often on the dreamer's left. More importantly, the objects that involved or presupposed interaction physical manipulation by hand appear more frequently to the speaker's right. These findings suggest the motor preference and the possible factor of spatial schemas organizing the dreaming content.

## Keywords

image schemas, spatial orientation, dream reports

## 1. Introduction

Dream research today focuses on how the human brain processes information during sleep. Growing amounts of data provide insights into memory consolidation [1, 2, 3], emotional regulation [4], and threat simulation processes [5, 6] during sleep. Dreams are hyperassociative, with concepts and memories being activated based on broad associations with other elements of the dream [4] while the dream unfolds as a coherent narrative. Dreams are predominantly visuospatial, and the vivid imagery in dreaming is associated with activation in the visual association cortex and spatial cognition [7]. Considering these findings, the spatial embodied experience in dreaming emerges as a promising object of research. However, the spatial dynamics of dream content—specifically, how certain elements in dreams are positioned relative to the dreamer—remains underexplored. At the same time, spatial orientation in dreams may offer key insights into the embodied experience re-enacted by the unconscious mind, which will be particularly relevant in the light of the threat simulation theory. In this paper, I present the early findings from a study that investigates spatial (left-right) orientation in dream reports.

The threat simulation hypothesis [5] approaches dream content from an evolutionary perspective. According to this theory, dreams function as a simulation system, allowing the dreamer to rehearse responses to threatening situations in a safe, virtual environment. This rehearsal mechanism provides individuals with evolutionary advantages by preparing them for real-world threats, allowing the dreamer to practice strategies of coping with these challenges. Research on the spatial orientation of these threats, as well as the different means of responding to them, and how the side (left or right) on which they appear might affect the dreamer's perception and response, may hence provide insights into the possible rehearsal processes.

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The Eighth Image Schema Day (ISD8), November 27-28, 2024, Bozen-Bolzano, Italy

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## 2. Methods

The dataset used for this study is a corpus of 60,155 dream reports collected from publicly available dream journals on the platform [www.dreamjournal.net](http://www.dreamjournal.net). No demographic information on the users other than their nicknames was included in the dataset, and in print, no names or other identifying information are included in the quotes from the reports.

First, the concordance lists with the context size of 25 items were formed for phrases “to my left” (1303 hits) and “to my right” (1322 hits) with the help of the AntConc 4.3.1. software. Second, the first 500 hits in both extracted concordance lists were manually annotated for the element positioned to the left or to the right of the dreamer. The following categories were used for annotating these elements:

- animate (human/animal) characters
- inanimate objects
- threat (including elements that either conventionally evoke the sense of danger or are identified as a threat or scary/disturbing by the dreamer, such as hostile figures, dangerous animals, or hazardous settings)
- path: passage (including doors, passageways, hallways, staircases, etc.)
- path: destination (presupposing the dreamer’s movement to the left/right mentioned separately or alongside the object located to their left or right)
- container (structures that can potentially enclose the dreamer, such as buildings, rooms, etc)
- scenery (settings such as natural environments or urban areas mentioned by the dreamer without distinguishing a specific element)

Only the context of 25 items to both sides of the phrase were considered, without reference to the broader context of the dream. In almost all cases, this context window was enough to annotate the element. More than one annotation per a hit was possible when several categories applied or more than one element was mentioned as a salient one to the dreamer’s left or right.

Finally, the statistical significance was calculated to compare the frequency of these elements between “to my right” and “to my left” concordance lists (N=500).

The selection of the categories for annotation was informed by the image schema concept and the cognitive theory. The concept of image schemas, introduced by Johnson [8] and developed by Lakoff [9, 10] and others, describes recurrent patterns in human perceptual and motor experiences that have impact on cognitive processing. Since there are universal conventional metaphorical conceptions involving image schemas such as UP IS GOOD, I was primarily interested in analyzing the types of elements that tend to be dreamt to the left or to the right in relation to the perceiving agency of the dreamer. In addition, the CONTAINER and PATH(destination or passage) annotation categories were selected in line with the basic image schemas involved in the categorization of human experience.

After this first round of manual annotation, both concordance lists for phrases “to my left” (1303 hits) and “to my right” (1322 hits) were annotated for interactional patterns. In this procedure, I marked i) the objects with which there was an explicit manipulation—physical interaction involving hand gestures (grabbing, catching, pushing etc) and ii) all kinds of objects that invite such immediate interaction (for example, cabinets, oven, candies etc.) and if these objects are reported to be on the dreamer’s left and right side. Only the objects and the interaction mentioned in the span of the concordance context (25 tokens to the left and to the right) were annotated.

Finally, collocation queries made with the help of the AntConc software were used to complement the obtained results.

### 3. Results

Image schemas such as CONTAINMENT or PATH play a significant role in structuring the waking conceptualization of experience, and the experience of spatial orientation appears even more expressed in dreaming. Dream reports tend to contain a lot of details that would not have been salient in narratives on real-life experiences, such as specific location of objects and characters in relation to the dreamer. While the general plot may be elusive due to vague recall of the dream or hyperassociativity that results in the shifting settings, individuals retelling their dreams rarely exhibit difficulties in reporting the immediate physical positioning of the objects and characters in relation to them, except for some dreams in which this positioning is reported as specifically vague (and in that, still salient enough to be mentioned). However, left and right positioning in relation to the dreamer in our sample does not generally show any confusion or vagueness in the ways dreamers narrate it.

As for the annotated items, their absolute numbers found in the processed samples (N=500) along with confidence intervals for the left-right comparison are presented in Table 1.

**Table 1**

Results of manual annotation for 500 concordance lines of “to my left” and “to my right”

	Inanimate	Animate		Threat	Path		Container	Scenery
		<b>Human</b>	<b>Animal</b>		<b>Destination</b>	<b>Passage</b>		
“to my left” (N=500)	117	178	19	34	39	<b>63</b>	53	39
“to my right” (N=500)	121	195	19	39	38	<b>41</b>	56	52
Confidence interval [12]	[-0.06079, 0.04479]	[-0.09391, 0.02591]	[-0.02370, 0.02370]	[-0.04224, 0.02224]	[-0.03105, 0.03505]	<b>[0.006258, 0.08174]</b>	[-0.04463, 0.03263]	[-0.06162, 0.009616]

In the first round of annotation for the basic types of elements located to the left or to the right of the dreamer (Table 1), most categories (Inanimate, Animate(Human or Animal), Threat, Path(Destination), Container, and Scenery) do not show statistically significant (or even seeming) quantitative difference. The only category that demonstrates a difference is Path(Passage), which included annotations for all kinds of passages (doors, hallways, paths, staircases, and windows) that can potentially lead the dreamer into a different space. Path(Passage) is more commonly positioned to the left of the dreamer in my dataset.

**Table 2**

Results of manual annotation for manipulated objects “to my left” (1303 hits) and “to my right” (1322 hits)

	<b>Objects manipulated explicitly</b> in the concordance context span (25 tokens RL)	<b>Objects offering potential of manipulation</b> (conventional purpose) in the concordance context span (25 tokens RL)
“to my left” (N=1303)	<b>47</b>	<b>18</b>
“to my right” (N=1322)	<b>74</b>	<b>34</b>
Confidence interval [12]	<b>[0.003903, 0.03591]</b>	<b>[0.001275, 0.02253]</b>

In the second round of annotation, which targeted interactional patterns, both concordance lists for phrases “to my left” (1303 hits) and “to my right” (1322 hits) were analyzed. In Table 2, the first column represents the objects with which there was an explicit manipulation—physical interaction involving hand gestures (grabbing, catching, pushing etc)—and the second column represents all kinds of objects that offer the potential of such interaction (for example, cabinets, oven, candies etc.)

reported to the dreamer's left and right side. This category was rather hard to define with regards to the dreams' typical use of objects in non-typical ways, so I relied on the conventional use of the objects mentioned by the dreamers—that is, if a mentioned object to the dreamer's left or right normally requires manual manipulation. For example, a tree or a sofa appearing to the dreamer's left or right were not annotated because these objects may be touched, but it is not their functional idea, while a control console or a cabinet were counted as object inviting potential manipulation. It was done to check the presence of the intuitive positioning of objects to the dominant hand (with a high degree of statistical probability, the right hand) or the work of dream logic categorizing objects according to the LEFT-RIGHT image schema.

## 4. Discussion

The most conspicuous results of this pilot study are the distributions of manipulated objects and objects that potentially invite manual interaction. There are more mentions of Objects manipulated explicitly in the concordance context span that appear to the dreamer's right (34 instances) than to the speaker's left (18 instances). The objects offering potential hand manipulation that appear to the dreamer's right (74 instances) than to the speaker's left (47 instances) follow on this distribution. This finding relies on the cases available to be extracted from the corpus quickly and requiring a manageable manual annotation procedure. However, it opens the possibility of digging deeper in the corpus, extracting and sorting other mentions of LEFT and RIGHT as spatial orientations as the interactional dynamics show clear tendency to appear more often on one's right in dreams.

Interaction may happen with an object that is conventionally manipulated by hand, as in the following:

- (1) *I couldn't move because I was pinned under him and my covers. **I reached to my right and grabbed my small hatchet.** It's cover was on it. I whacked him three times on his head..*

However, dreams being creative, hyperassociative, and often featuring blends between concepts and representations, dreamers report manipulating unexpected objects in unexpected ways, for instance:

- (2) *I glanced **to my left** and saw **a strange imprint** on the floor. It looked like a large dog paw. I touched it and it opened slightly*
- (3) ***To my left** and on the floor is **a childrens toy** with a cubby hole on it. **I touch it and I'm back where I began** at the forest, still quiet, dark, and lonely.*

Reasons to suspect interaction in the mentioned objects are sometimes even evident on the explicit level, such as in the following fragment of a dream the narrator calls the hearth "unlit" referring to its main function:

- (4) *There is an old wooden bed to my left, a door straight ahead **and an unlit hearth to my right** with a mirror above and some cluttered ornamentation laid upon it (including one lit candlestick), the room has a very Dickensian feel*

However, generally, objects that can be taken, grasped, or otherwise interacted with included a wide variety of items (e.g., cabinets (that can be opened), TV sets and computers (that can be turned on), books or other small items usually held in hands, food, etc. For example:

- (5) *I looked over at the counter **to my right and saw a big plate or tray** (perhaps that big round pizza pan we have) **with pieces of bread sitting on it.***
- (6) *There is **a large table to my left covered with luggage and coolers.** This is where people on vacation leave their things.*

Another factor to consider is the pragmatic sense of manipulating the object, such as determining if it is an instrumental action meant to attack, protect oneself, or achieve other aims. It might also play a role in dream content construction, following in the logic of threat simulation

hypothesis rehearsing scenarios. For examples, interacting with an object to one's right may be a rehearsal of the scenario where the dreamer tries to protect themselves from danger:

- (7) *the stairs were unsafe. I stopped on the top step, **my hand grasping the wall to my right;***
- (8) *from a side street driving a freaking 18 wheel big rig, **is the villain again.** Uh oh. So **I grab onto the metal bar to my right** and hang on for dear life. The truck t-bones the bus, the windows explode instantly, and the bus gets slammed hard*

In turn, the fact that passages (e.g. doors, paths, staircases) show some increase in the left position regarding the dreamer reveals interactional dynamics as well (that is why the results obtained for the frequency of passages in the first round of annotation inspired the second round focusing on interaction with objects). Passages can lead the dreamer into another setting, often a container (a room), and are associated with the PATH image schema as they lead somewhere and invite the dreamer to follow them. When seeing a door, one conceptualizes it through the container it leads to (or out of). This interactional characteristic of passages creates a possible implication for their more common positioning to the left of the dreamer.

Curiously, the folk interpretation of dreams offers a speculation that moving to one's left in the dream means moving away from one's consciousness to the realm of subconsciousness. In popular interpretation of dreams, the right side represents the logical faculties, the rational, dominant, and confident; hence, movement to the right marks emerging conscious awareness [13]. The left is the opposite, the vulnerable intuitive, unconscious side [13]. This interpretation has culturally sound roots. For Jung, based on his extensive knowledge of symbolism, the right side stands for the realm of consciousness, and the left is "the side of the unconscious" [14]. In a similar perspective, in Freud's interpretation of dreams as symbolically coded experiences, right and left are considered to represent the ethically right and the delinquent, respectively (following Stekel) [15]. These deliberations may be partly supported by the finding of more frequent appearance of passages to the dreamer's left, leading the dreamer further into the dream, as one of possible interpretations. If one takes the liberty to suggest that passages lead to a change of scene and unfolding narrative, that might be interpreted as movement from the rational to the uncontrolled, passive experience of dreaming. This inspires further research on the specific types of passages and their roles in the broader context of a dream.

Some difficulty of contextualizing the results of this study within the current dream theories consisted in the ambiguous implications of left-right positioning of threat for the threat simulation—would it be reasonable to expect that righthanded people (who constitute a statistical majority [11]) would dream of threats to their right or to be left? Which positioning of the threat would be make it easier to handle and which would render it more difficult? Does easier or more difficult positioning of the threat create more evolutionary benefits from the point of view of the threat simulation?

The finding concerning the more frequent interaction with objects to one's right as well as apparition in the dream of potential objects for manipulation on the dreamer's right may hint at the need to revise annotation for threats and include a differentiation of threats to those that require engagement and those that require fleeing or other actions. The motor preference of positioning the objects to one's right also falls in line with the waking experiences of most right-handed people. At the same time, it should be noted that in dreams, the dominant hand may be the opposite, which means that the waking-life motor preferences do not necessarily map on dreaming experience for all dreamers:

**Fig. 1.**

A fragment of the KWIC tool view in AntConc for "dominant hand"

File	Left Context	Hit	Right Context
1 Text ...	She looks so sexy that I can't resist and I smooth my left hand (	dominant hand in dreams)	over her stomach, feeling her skin. She looks back in outrage,
2 Text ...	possibly be as quick as the train normally, this time I use my left hand (	dominant hand in dreams)	to mind control her, as well as using my true talent
3 Text ...	hest) arrives and says to recommend playing with my left hand instead (my	dominant hand in dreams)	I find it odd that "string man" is talking rather than
4 Text ...	down their heads and then we go off, arm in arm -- her in my "left" (	dominant hand in dreams)	I even say her name, "Clarity". We watch the sunset which
5 Text ...	enough, I believe I raised my left hand, which is unusual because it is the	dominant hand in my dreams)	rarely used. My mom comes to take a picture of
6 Text ...	I remember) I smile as I hold Jamie's hand firmly with my left (my	dominant hand in my dreams)	in her right, and the camera view goes up to
7 Text ...	In a bright situation, I m holding Liz s hand with my left hand (????!! My	dominant hand in dreams)	and we have a very romantic interaction. She kisses me lightly
8 Text ...	downwards. But before she can do more, I then switch to my left hand, my	dominant hand in dreams)	and finish my statement: "I can show you ...miracles." Nothing sig
9 Text ...	Nevertheless, this fails as well. I note that I was using my left hand--my	dominant hand in dreams--	which should have drastically increased my power. This infers the
10 Text ...	was calmed down. I calmly smile as I very slowly move my left hand-- my	dominant hand in dreams--	to a "snap-finger" position, holding another balloon by its string

In Fig. 1, there are examples of dream reports where narrators state that their dominant hand is different from waking life in dreams. This fact means that it when interpreting the preference for right-side positioning on interactive objects in dreams in the light of the threat simulation hypothesis, one should remember that the waking motor preference may be the opposite in dreams. Finally, there might be salience bias in reporting, with people feeling urge to indicate the hand when it is an unusual motor experience.

In turn, the fact that passages are more frequently located to the left of the dreamer may testify to the fact that righthanded people (assuming that the statistical distribution of righthanded people in the sample is standard) dream of the passages that lead to a possibly unknown, new setting located on their left. The possible interpretation of this finding might be either that the threat simulation adaptation in sleep creates a vulnerable scenario with some unknown element (that is the threat) to the dreamer's left, or that it is handier to have a threat to one's left. The perspective for research would be following this interactional logic and including the tools as a category of annotation for inanimate objects, as well as fine-tuning annotation for other categories by marking the interaction with the element. That will allow to analyze the types of passages to one's left as well as to compare the frequency of tools appearing in the dreams on the side of the dominant hand versus tools dreamt as located on the allegedly less agile/coordinated side.

If a particular content element in dreams coincides with a left motor orientation, this might bring insights into the co-activation of certain domains and lateralization of cognitive functions to a certain hemisphere. Except for the "new as a potential threat" interpretation of a passage, the more frequent presence of passageways of different kinds to the left of the dreamer might also be due to their role as goals, decision points, or escape routes in the dream plot, whose orientational lateralization should be regarded in relation to the brain hemisphere specialization (or lack thereof).

In addition, the dream construction dynamics, with objects and elements appearing and disappearing from the scene in subtle ways, may also bear significance to the distribution of different kinds of elements located to one's left and right in dreams:

(9) *I notice the stall wall to my left is not how it should be, it is some sort of fabric, I reach out to poke it*

Unexpected apparitions or transformations were present both in the left and right contexts:

(10) *As he walks forward, I see my piano behind me and then teleport to my left, so that I am now facing the piano's right side (my piano is Baldwin style with a flat top...)*

(11) *There were people standing to my right and they changed to a rack of uniforms. The embarrassment I felt about the situation. The sudden power loss.*

However, further research will target the presence or absence of motor preference in the dynamic dream-construing processes.

## 5. Limitations

This pilot study aimed at establishing the categories worth investigation. Phrases “on my right” and “on my left” were not included so far, which limits the scope of this study, as well as annotation constrained to the context window of 25 tokens. These results being preliminary, I intend to adjust the annotation protocol by including the subcategories of THREAT and PATH, and continuing to control for TOOL and INTERACTION to the descriptions of the element positioned to the left and to the right of the dreamer.

Another limitation is the absence of information about factors like handedness and motor preference in the dreamers who recorded their dream experiences, which requires relying on general population statistics.

## 6. Conclusion

The preliminary results of this study on the left-right positioning in dreams point to an asymmetry in the representation of interactional elements in dreams. Objects which the dreamer manipulates by hand or which presuppose such manipulation tend to be on the right side, which corresponds to the statistically more probably waking preference of many people. At the same time, passages that arguably represent the unknown tend to be located on one’s left in dreams. Passages, which often mark points of transition or movement in both waking and dreaming life, possibly reflect a motor preference for engaging with the new content, or a connection between the motor activation and the dreaming content. By continuing this research with adjusted annotation procedure to focus more on the types of threats, passages and items that the dreamer can engage with, I hope to contribute to the growing body of research that links cognitive processing in dreams to image schemas and embodied cognition.

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