

Experiment 94 Segmentation Rules

Robert Ma Yee, David Ng, & Takahiko Masuda

0. Basic rules

The basic rules of the segmentation is as follows:

- 1) Each block should have one base object (#*0) and one base behavior (#*4)*¹
- 2) Other categories can be seen as additional information.
- 3) If there is an expression that has to do with a stable object, then it should have at least two segments: relation with stable object (#*6) and the object as a modifier (#*9).
- 4) If there is an expression that has to do with an active object, then it should have at least two segments: relation with active object (#*7) and the object as a modifier (#*9).
- 5) We need to focus on new information. Do not count the repeated information of the aforementioned object*².
- 6) Because participants don't know well the water world, they sometimes mention things mistakenly. So, coders have to infer the object they mentioned in the animation and code it based on the correct object in the chart of objects of each animation.

Categories	#	example	#	example	#	modifier
Base Object	10	a fish				
Number	11	Two				
Attributes	12	Large				
Feeling	13	Angry				
Base Behavior			14	is floating		
Location			15	at the top of the screen		
Stable Objects			16	next to	59	the seaweed
Active Objects			17	with	19	other fish
Time			18	at the end of the film		

*¹ the expressions such as “there was” and “there were” don't be counted as “base behavior”. In addition, the word “have” can be seen as the word “with”. It is not a behavior

*² However, if the aforementioned object had to do with other objects, this unit should be seen as a new information. So, the first object will be counted as a modifier or something.

1. Base Objects=Number=Attributes Issues

2. Base Behaviors

3. Relation with Location (#*5)

4. Relation with Stable Objects (#39. #59. #79. #89. #99)

5. Relation with Active Objects (#19. #29. #49. #69.)

6. Relation with Time

7. Insufficient information

1. Base Objects=Number=Attributes Issues

1.1.Base Object

1.1.1.Basic expression.

Basically, an object is categorized as a “base object”

e.g.

There was a fish	10
------------------	----

a fish	10
--------	----

1.1.2.Group expression,

Participants sometimes saw objects as a group. In this case, the whole segment can be seen as a “base object”.

e.g.

There was a school of fish	10
----------------------------	----

There's one piece of sea weed	50
-------------------------------	----

There is a little	72
-------------------	----

Chunk of rock	70
---------------	----

1.1.3Expression with the name of the kind

1.1.3.1 with concrete kind

If you see the name of a concrete object (natural kind), it should be one segment.

e.g.

a trout	10
---------	----

a trout type fish	10
-------------------	----

And there was like lily pads or something	50
---	----

There was a bug that looked like of beetle	40
--	----

One of them seems to be a rainbow trout	10
---	----

Angular fish or whatever they are,	30
------------------------------------	----

There is some kind of leech or planarian type thing,	30
--	----

Fish	10
------	----

Came along,	14
-------------	----

(Looked like a salmon or a bass),	08
-----------------------------------	----

1.1.3.2 with unclear name of the kind

Participants sometimes use an unclear name of the natural kind. Code them as a ‘base behavior’.

e.g.

and sea creature type stuff	40
-----------------------------	----

sea nymph bug thing	40
---------------------	----

1.1.3. Expression more than two objects

1.1.3.1. with the word “or”

If you see the marker “or”, then it should be one segment.

e.g.

And there were some coral or rock formation	50
---	----

1.1.3.2. with the word “and”

If you see the marker “and”, then it should be more than two segments.

e.g.

And there were some coral	50
---------------------------	----

And rock formation	70
--------------------	----

1.1.4 Unclear expression

This case, the coders have to specify what is.

e.g.

And some things	30
-----------------	----

Object with ordinal numerals

Ordinal numerals look like number. But, it should be categorized as a new base object.

e.g.

The fifth one	10
---------------	----

1.2. Number=Base object.

1.2.1 Basic number=base object

Normal connection between number=base object should have number segments and one base behavior.

e.g.

There was five	11
----------------	----

Fish,	10
-------	----

1.2.2.Only number

if you don't have actual object such as "fish", the segments should have only number information.

e.g.

Four	11
------	----

Were the same,	12
----------------	----

1.2.3.Unclear number

The expressions such as “some”, “several”, “a couple”, “a few” and so on can be seen as a base object.

e.g.

And a couple of fish	10
----------------------	----

1.2.4 number with “other”, “another”

If you have "other", it should be in the segment of number information. However, if you have "another" or "another one", it should be regarded as a base object.

e.g.

the other two	11
---------------	----

were both small,	12
------------------	----

Another one	10
-------------	----

Was small.	12
------------	----

1.2.5. number with the word “a pair of”

If participants said clear object with clear number words such as “a pair of”, there should be one number segment and one base object segment.

e.g.

One pair of	11
Fish	10

There were one pair of	11
Red	12
Fish	10

1.2.6. number with the word “a group”

1.2.6.1 with base object

If you have a segment "a group" and actual object such as "fish", combine the segment "a group" with the number information.

e.g.

There is a group of three	11
Fish	10

1.2.6.2 without base object

If you have not a segment of base object, you need to regard the segment "a group of", as a base object.

e.g.

And a group of	10
Three	11
Following	14

1.2.7. One and more than two

1.2.7.1. One object

If participants mention “one” or “a”, the segment should always be in the “base object”.

e.g.

There is a fish	10
One fish	10

1.2.7.2 More than two

If participants mention “two”, “three” and so on, the segment should always be in the “number”

e.g.

There is two	11
Fish	10

1.3. Attributes=Base Object

1.3.1. Basic attributes=base object expression

Normal connection between attributes=base object should have attributes segments and one base behavior.

e.g.

And some orange	12
And white	12
Fish	10

Orange	12
And white	12
Striped	12
Fish,	10
With its mouth	12
Open	12
And its had white	12
Fins	12

He had large	12
Scale looking thing	12

The water	80
Was a light blue color	82

1.3.2. Unclear expression with a clear attribute

Even though there is a unclear expression, attribute segment can be counted.

e.g.

And there was some kind of sponge like	32
Thing	30

1.3.3 The attribute expressions “Different”, “Same”.

These expressions can be regarded as a ambiguous but clearly attributes.

e.g.

There was all different types of	52
Coral	50

1.3.4. Comparison with the previous animation.

Do not count word that has to do with previous animation. But, if you can see a concrete attribute there, code it.

e.g.

Was fairly greener than any of the previous times	12
---	----

1.3.5. Negative expression

If the expression is negative, only one category should be assigned for the segment.

1.3.5.1. with an actual object.

If you find an actual object in the animation such as a plants, code it using the object’s the tens digit.

e.g.

There were no leafy plants.	52
-----------------------------	----

1.3.5.2. without an actual object.

If you don’t find an actual object in the animation, code it using the environment’s the tens digit.

e.g.

There were no leafy plants in this animation.	92
---	----

1.4 Avoiding repetitions.

Generally, American participants tended to use pronoun when they continue to mention a objects. But, this information can be regarded as a repetition. Do not make categories for this kind of information.

1.4.1. Comparison between repetition and no repetition

1.4.1.1. Normal case

This case, there is no repetition. The coder easily categorizes them.

e.g.

lizard type thing	40
Swimming down	44
from the top to the bottom of the left side of the screen,	45

1.4.1.2. Relational pronoun.

Do not count the expression of relational pronoun.

e.g.

And another two	21
That were smaller	22
And were also swimming	24
to the left,	25

1.4.1.3. Pronoun

Do not count the pronouns.

e.g.

three	11
big	12
fish	10
Moving over	14
to the left,	15
and then they were moving sort of up and down,	14

there was like a shrimp	40
Moving	44
it was on the left	45

1.4.2. Mistakes and repetition

Participants sometimes made mistakes and tried to rephrase it. Segmenters will add markers “()” to avoid coding. All rephrased segments will be “#08”.

e.g.

(again there were five)	08
(fishes,)	08
(three of them)	08
(were pretty big)	08
(compared to)	08
(the other two)	08
six	11
fishes, sorry,	10
(there were six fishes total),	08

1.4.3. Repetitional object with number

If you see base objects mentioned before, you don't need to count them.

e.g.

And then three of the fish	11
then two of them	12
then one of them	10
then one of the four fish	10

1.4.4. New information

This case. "ones" is a new information. So, you can count it.

e.g.

all of the fish	10
were striped	12
and there were three	11
little	12
blue	12
ones	10
all of the fish	10
were striped	12
Three of them were	11
Little	12
Blue	12

1.4.5. Specification

If you see specified objects from the group, you can count them.

e.g.

There are a group of fish	10
One of them	10
Was large	12

2.Base Behaviors

2.1 Basic expression

2.1.1. Normal verb

All expressions that have to do with verb should be coded as "Base Behavior". Following expression is a typical case: moving, swimming, going,

e.g.

a fish	10
Was moving	14

2.1.2. Special case for plants

The expressions such as growing, spread, and living should be coded as "attributes".

e.g

There was a plant	50
growing	52

2.1.3. Special case for inert animals.

The expression such as “down” should not be counted. It will be seen as the same expression as “there is”, or “ there are”.

e.g.

and I saw a couple shells down	
--------------------------------	--

2.2 Adjectives of the behavior

2.2.1. With one adjective unit.

Normally, the adjectives of the behaviors should not be counted.

e.g.

Moving very slowly,	14
Swimming fast	14
Swimming up	14
Drifting up and down	14
Swimming back and forth	14
Was slow	14

2.2.2. with more than two adjective units.

If you see more than two adjective units, then there should be more than two segments.

e.g.

moving up slowly	14
And then down.	14

Was slow at first,	14
Then fast later	14

2.3 Swimming Forms

Do not count the swimming forms

e.g.

Moving across	14
---------------	----

Comes diagonally	14
------------------	----

They moved a little bit in an up and down fashion,	14
--	----

2.4. Behavior with words “***wards”

As far as you can not see a concrete expression that has to do with the location, it will be seen as a adjective of the behavior, and it should not be counted.

e.g.

kind of floating upward	14
-------------------------	----

it was almost swimming backwards to a certain extent,	14
---	----

that was going up and backwards a little bit	14
--	----

3. Relation with Location (#*5)

3.1 Basic expression

Basically, there are three different expressions regarding the relation with location. Of course, all expressions have to be categorized as #*5. But, you should know the content at least for better segmentation.

3.1.1 two dimensional location

The expressions such as “top”, “bottom”, “right”, “left”, and “middle” should be in this category.

e.g.

Swimming	14
at the top of the screen	15

3.1.2 three dimensional location

The expressions such as “front” “background” should be in this category.

e.g.

Swimming	14
In the background	15

3.1.3 location as the adjective of a behavior

The expression such as “from – to” should be in this category.

e.g.

Swimming	14
From left to right	15

3.2 Multiple cases

If you see more than two different code in the expression, you have to make more than two different segments.

3.2.1 Clear multiple cases.

In the following case, two different modes are separated each other, so, you can easily make two different segment.

e.g.

a frog	40
at the top,	45
Both swimming off	44
to the left of the screen,	45

3.2.2 Difficult multiple cases

In the following case, three different modes are expressed at the same time. You have to see carefully the difference of the mode.

e.g.

and there is three	11
fish	10
that are moving	14
to the left	15
in the background	15
at the top	15

3.3 Looks multiple but single mode cases

Some expressions look like multiple expression. But, you need to be careful. Some expressions only say one mode even they are long expressions.

e.g.

and then there was a rock	70
Right in the middle at the bottom.	75

Then, near the bottom of this screen on the left	15
--	----

Going	14
From the middle bottom to left lower left hand corner,	15

and some bubbles	60
Move	64
From the middle of the screen up to the top.	65

3.4. Location and the word such as “out”

The word “out” or “off” indicates that the participants make clear the location. Segmenter will be make an independent segment for the expression such as “of the picture” and “of the screen” even though they didn’t specify the location.

e.g.

swam out	14
of the picture	15

swam out	44
of the screen	45

3.5. Location and the word such as “there”

The word such as “there” indicates that the participants didn’t specify the location. Segmenter won’t make an independent segment for these expression.

e.g.

that stayed in the same position	14
----------------------------------	----

it was swimming in place,	14
---------------------------	----

and just kind of hesitate there,	13
----------------------------------	----

4. Relation with Stable Objects (#39. #59. #69. #79. #89. #99)

4.1 Basic expression

As we mentioned before, there should be at least one relation marker and one modifier in the “Relation with Stable object”.

4.1.1. Basic expression as a concrete object

e.g.

There was some more shell	30
About a quarter of the way up in	36
The seaweed.	59

4.1.2. Basic expression as a pronoun

The example shows a pronoun “it”. It indicates “some sea weed”. So, code it as “modifier”

e.g.

There was some sea weed	50
That had leaves	52
There was some more shell.	30
About a quarter of the way up in	36
It	59

4.2. Stable object with attributes, location

The tens digit of the attributes, the number, and the feeling that have to do with the stable object should be correspond to that of the stable object (modifier).

e.g.

And another fish	10
stuck	14
In	16
a little	32
sea anemones.	39

4.4 Stable object with another stable object

There are some multiple case in the relation with stable objects.

e.g.

and then you had air bubbles	60
going diagonally	64
from	66
the floor	79
of	76
the sea.	99

4.5 Stable object and verb “have”

As I mentioned before, the word “have” can be seen as the word “with”. It is not behavior.

4.5.1 With relational marker.

If there is a relational segment, do not make a segment only for the word “have”

e.g.

There were three	51
Plants	50
To the left	55
That had some kind of animal	30
On	36
One of the plants	59

4.5.2. Without relational marker.

If you can not see the relational marker, the word “have” should be a segment.

e.g.

There were three	51
Plants	50
To the left	55
That had	56
some kind of animal	39

4.6 Stable object and word “with”.

4.6.1. with relational marker.

If there is a relational segment, do not make a segment only for the word “with”.

e.g.

There was some coral	50
with a small	12
Fish	10
trapped	14
Inside of	16
it	59

4.6.2. without relational marker.

If you can not see the relational marker, the word “with” should be a segment.

e.g.

There was some coral	50
with	56
a small	12
Fish	19

4.7 Stable object with repetition

If you already establish relational segments, additional information can be seen as repetition. Segmenter will put parentheses on them.

e.g.

On the bottom right	35
In	36
The sea weed	59
There's two	32
Shells	30
Attached to	34
(the sea weed)	08

On the bottom right	35
In	36
The sea weed	59
There's two	32
Shells	30
Attached to	34
(it)	08

5. Relation with Active Objects (#19. #29. #49.)

5.1 Basic expression

As we mentioned before, there should be at least one relation marker and one modifier in the “Relation with Stable object”.

5.1.1. Basic expression as a concrete object

And smaller	12
Longer	12
Fish	10
Above	17
The jellyfish	49

5.1.2. Basic expression as the pronoun

And smaller	12
Longer	12
fish	10
above	17
them,	19

5.1.3. Basic expression as the number

Sometimes, participants said just the number of the objects. (especially, fish). This case, participants usually have mentioned the number and the base objects before. So, code the modifier word not as “number” but as “modifier”.

they were also different	22
from	27
the five	19

5.2. Active object with attributes, location

The tens digit of the attributes, the number, and the feeling that have to do with the stable object should be correspond to that of the stable object (modifier).

e.g.

And another fish	10
Is swimming	14
Near	17
a little	42
Tadpole	49

5.3. Active object and word “with”

5.3.1. with a relational marker.

If there is a relational segment, do not make a segment only for the word “with”.

e.g.

and there was some kind of sponge like	32
thing	30
on the left	35
with some red	12
and white	12
striped	12
fish	19
Swimming	14
Next to	17
It	39

5.3.2.without a relational marker.

If you can not see the relational marker, the word “with” should be a segment.

e.g.

and there was some kind of sponge like	32
thing	30
on the left	35
with	12
some red	12
Fish	19

5.4. Active Object and the word “when”

5.4.1. with a relational marker.

If there is a relational segment, do not make a segment only for the word “when”.

e.g.

And a turtle	40
that when the squid	49
Left	40
came in	44
that spot	47
and moved down	44
to the right,	45

5.4.2.without a relational marker.

If you can not see the relational marker, the word “when” should be a segment.

e.g.

and a turtle	40
that when	47
the squid	49
Left	40
came in	44

5.5. Active objects and the word “while”

5.5.1. with a relational marker.

If there is a relational segment, do not make a segment only for the word “while”.

e.g.

While this was going on	14
a crayfish	40
Was swimming	44
Next to	47
It.	19

5.5.2.without a relational marker.

If you can not see the relational marker, the word “while” should be a segment.

e.g.

A fish	10
Is moving up	14
While	47
There was a crayfish	40

5.6. Active objects and the word “as”

5.6.1. with a relational marker.

If there is a relational segment, do not make a segment only for the word “as”.

e.g.

as they were moving across,	14
some bubbles	60
moved	64
from the right to the left	65
across	67
them.	19

5.6.2. without a relational marker.

If you can not see the relational marker, the word “as” should be a segment.

e.g.

as	67
they were moving across,	14
some bubbles	60
moved	64
from the right to the left	65

A fish	10
that was in the picture who at that point swam out	14
of the picture	15
as	17
did	14
all the other fish	19
and turtle that was in the scene,	49
leaving	14
* code as a relation.	17
those two	11
fish alone.	19

5.7. Active object and the words such as “At that point”, “at the same time”

At first, these expressions seems to be in the category of “location” or “time”. However, these expression didn’t specify the actual location and time. Do not make segments for them.

5.7.1. with a relational marker.

If there is a relational segment, do not make a segment only for the word “at that point”.

e.g.

other fish	20
I believe that were in the top of the scene	25
and at that point, two other	11
Fish	10
Was swimming	14
On	17
It	29

5.7.2. without a relational marker.

If you can not see the relational marker, the word “at that point” should be a segment.

e.g.

other fish	20
I believe that were in the top of the scene	25
and at that point,	17
two other	11
fish	10

5.8. Active objects and the word “where”

Basically, the word “where” should be seen as a relational marker.

e.g.

One fish	10
Is swimming as well	14
Where	17
a tadpole	49
Was swimming off	44
Screen to the bottom right	45

The other two	21
Gray	22
Ones	20
Towards where	27
The newt	49
Was right before it left	44
The animation	45

5.9. No relational marker case.

Because some verbs do not need the particles to connect with other objects, we sometimes can not find relational marker. In this case, segmenters will generate an artificial marker to ask coders to count them. In following case, six fish were followed a fish. So, we need relational word to count “relation with active object”. However, because of the grammatical structure, sometimes, we can’t find the actual word. In this case, add “ *code as relation” category.

e.g.

as a group of	10
six	11
That followed	14
*code as relation	16
it,	19

e.g.

And one	10
Caught	14
* code as relation	17
it	19
From the left,	15
Joined	14
* code as relation	17
The group	19
From the left,	15

5.10. Active object and word “relative to”

As for the word “relative to”, we will see two different patterns. Sometimes we can’t find “basic behavior” but “attributes” in a relational phrase.

5.10.1 Base Behavior=Relation with active object

In this case, “relative to” refers the base behavior of the object.

e.g.

The one	10
at the top	15
Was pretty slow	14
Relative to	17
The ones	19
in the middle,	15

5.10.2. Attributes=Relation with active object

In this case, “relative to” refers the attributes of the object.

e.g.

The one	10
at the top	15
was pretty big	12
Relative to	17
the ones	19
in the middle,	15

5.11. Active object and word “matching”

The word can be paraphrased as “similar to”. Code it as “attributes’ and add an additional relational marker.

fish	10
Came in	14
matching	12
*code as a relation	17
the first one	19
which is still at the right side in the middle,	15

5.12. Active object and words such as “all”, “together” and “each other”.

5.12.1. Opposite direction

If more than two objects went to the opposite direction, code them as the “relation with active object”.

e.g.

There were two	12
Fishes	10
on top	15
Crossing	17
Each other	19
just at the same speed.	14

fish	10
Going	14
in the opposite direction	17
Swimming a little bit faster,	14

5.12.2. Same direction

If you see the objects went to the same direction, do not code them as the “relation with active objects”.

e.g.

All fish	10
----------	----

Swimming like in a line one by one..	14
--------------------------------------	----

There were four	11
fish	10
Together grouped (together)	14

Even smaller	12
fish	10
Swimming together also,	14

4.7 Stable object with repetition

If you already establish relational segments, additional information can be seen as repetition. Segmenter will put parentheses on them.

e.g.

On the bottom right	35
Near	36
The big	12
Fish	19
There's a tadpole	30
Following	34
(the fish)	08

On the bottom right	35
Near	36
The big	12
Fish	19
There's a tadpole	30
Following	34
(It)	08

4.8 at first – then relationship

At first	17
A fish	10
Showed up	14
And then another fish	19
Appeared	14

4-9 ahead-behind relationship

A fish	10
Ahead	17
Another fish behind	19

6. Relation with Time

6.1 Basic expression

the words that refer the time sequences of the animation should be coded as the “relation with time”.

e.g.

At the beginning,	18
There was one big	12
fish	10

at the end almost,	18
there was another group of	10
three	11

by the end of the animation	18
-----------------------------	----

On the way	18
A tadpole	40
Was swimming	44

that stayed in the same position	14
throughout the animation	18

6.2. Time related words as the adjective of the behavior.

At first glance, following words relate to the time. But, these words can be seen as adjectives of the base behavior. So, do not code them as the “relation with time”

e.g.

it disappeared	14
in the top screen after a while	15
and as soon as	47
it	19
Disappeared	14
a turtle or tortoise	40
came in	44

And finally another fish	10
came in	14

fish	10
that kind of hovered for a few seconds	14

and they sit (there) for a while	14
kind of moving	14
in the background	15

7. Insufficient information

7.1. Adding information

If participants summarized two different objects and give them one base behavior, add additional markers according to the number of the different objects

e.g.

a frog	40
and a insect	40
were floating	44
*	44

there was a rock	70
and some sea plants	50
and a sea anemone	30
at the bottom of	76
*	56
*	36
the ocean	99

7.2. Not adding information

If participants didn't mention the object (or modifier), count only the relational segment. Do not search the actual object (or modifier).

e.g.

and a little	42
frog	40
was jumping	44
By	46