

## N.o.t.a. - Not only Text Animator



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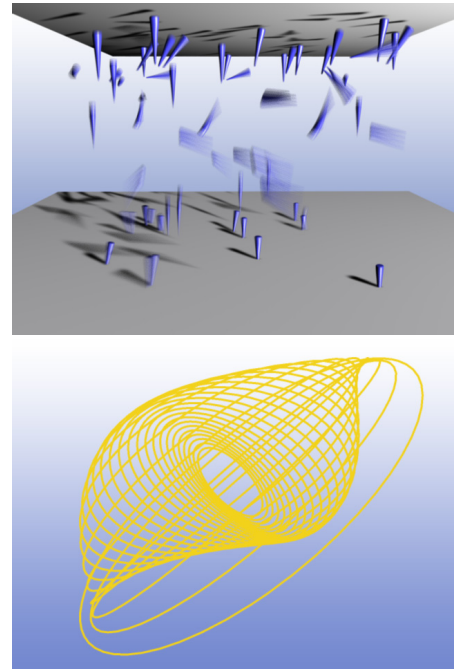
# 1 Introduction

## 1.1 What is N.o.t.a.?

N.o.t.a. is a plugin specifically designed for creating complex text animation effects. Whether you want to make some simple bouncing text characters or an extensive fly-in effect, N.o.t.a. is the ideal way to produce quickly and comfortably.

But N.o.t.a. would not be called the “*Not Only Text Animator*” if it was restricted to just text animation. You can apply N.o.t.a. animation to any group of objects you want and thus even animate natural things like bird flocks or rocks falling off a cave’s ceiling or use N.o.t.a. for abstract animations in Motion Design, e.g. for TV bumpers. Your creativity is the only limit...

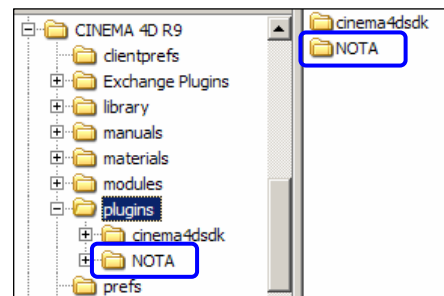
This manual helps you getting started with N.o.t.a. and also explains all parameters in detail. At the end of this document, you will find useful tips and advice.



## 1.2 Installing N.o.t.a.

To install N.o.t.a., simply put its folder into the plugin folder of CINEMA 4D. When you start CINEMA 4D next time, N.o.t.a. will be available as an expression tag in the object manager.

*Note: N.o.t.a. does not appear in the plugins menu!*



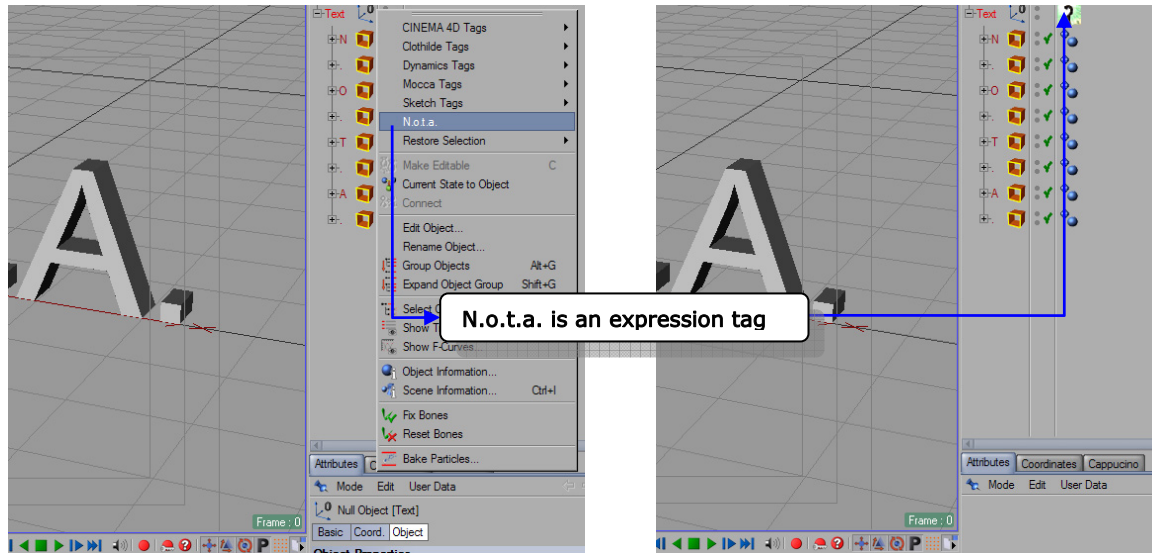
## 1.3 Demo Scenes

Together with N.o.t.a., you also received several example scenes that demonstrate the usage of the plugin. They can all be found in a subdirectory of the N.o.t.a. folder, called *N.o.t.a. Scenes*. In this manual we will sometimes refer to a certain *demo scene* which you can find in this directory.

## 2 Usage

### 2.1 Basics

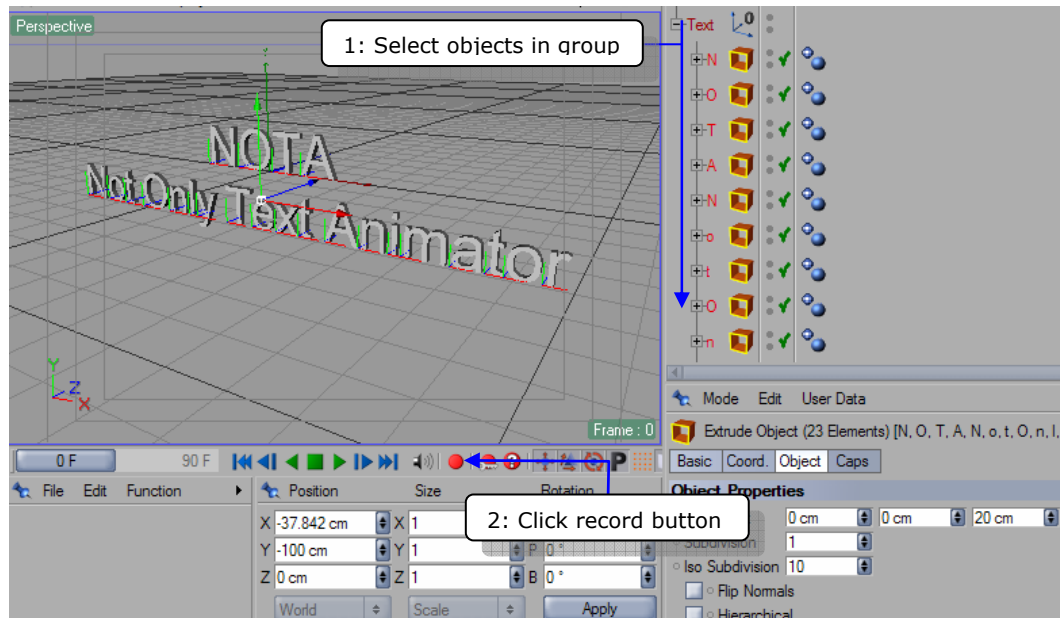
Like any other expression tag in CINEMA 4D, N.o.t.a. is selected in the context menu of the object manager. Just right-click any object (preferably an object group) and you will see N.o.t.a. in the menu. Selecting the menu entry will apply a N.o.t.a. expression tag to the object that you clicked on.



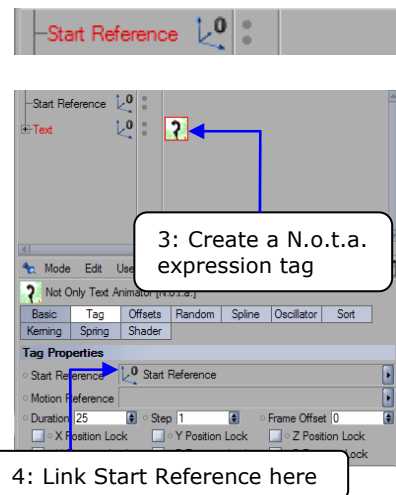
To edit N.o.t.a.'s parameters, just select the tag by clicking on it, and have a look into the attribute manager. It provides access to all parameters.



- At the beginning of every N.o.t.a. animation you have to keyframe the position, rotation and scale of all objects in the N.o.t.a. group. The keyframed values will be used as *target values* for N.o.t.a. and referred as such in the following.
- Select all objects in the N.o.t.a. group by using the selection rectangle or the *Select Children* command in the Attribute Manager's context menu. Then click the red record button in the animation toolbar. Now you have saved the target state of the N.o.t.a. group and can finally begin to work on the animation itself.



- Create a new Null object and name it "Start Reference". We will need this object to determine the start position and rotation of the animated objects.
- Right-click on the Null object containing the N.o.t.a. group and choose "N.o.t.a." from the context menu. In the attribute manager you will see the parameters in N.o.t.a.'s *Tag* tab.
- Drag'n'drop the *Start Reference* object into N.o.t.a.'s *Start Reference* link field.
- Now move the time slider in the animation toolbar, and you will see the characters of the text moving into position.
- Move the *Start Reference* object away a bit (e.g. move it to X=400; Z=-600) and maybe even rotate it to make the animation more interesting. You will see that the start coordinates of each character is always taken from the *Start Reference* and the target coordinates are the values that you keyframed before.
- Now simply start experimenting with the parameters and curves, and you will soon be amazed by the variety of effects you can get from them. Chapter 3 will explain all parameters and thus help you exploring N.o.t.a..



#### Remember the order:

1. Group your objects
2. Keyframe all objects
3. Apply N.o.t.a. to the group

## 3 Expression parameters in detail

This part of the manual explains all parameters of the N.o.t.a. expression tag in particular. Anyway, most of the settings are self-explaining, so you are invited to play and experiment with the N.o.t.a. parameters.

### 3.1 Tag

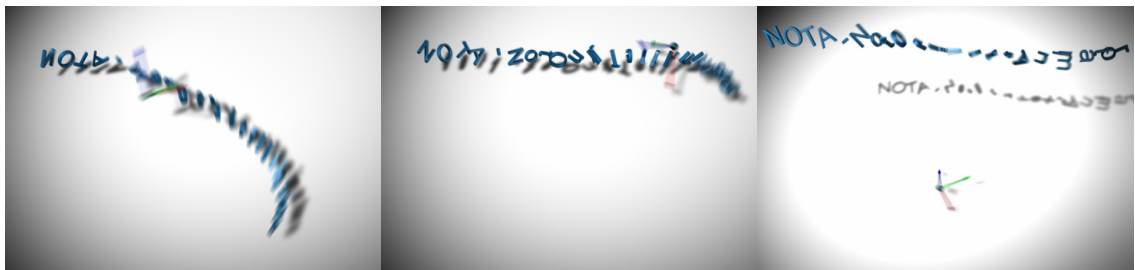
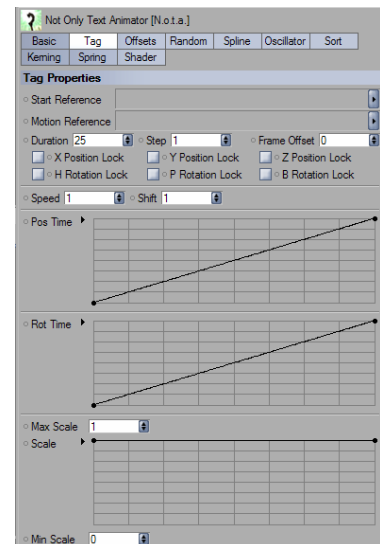
The tab “Tag” provides the main settings of the N.o.t.a. expression. All parameters that are required to create a basic animation can be found here. The other tabs help you to adjust the animation in many ways, but you can already make simple animations with just these parameters.

#### 3.1.1 Start Reference

Link an object here to define a start reference. The start position and rotation of all objects in the N.o.t.a. group will be calculated on the basis of this object.

#### 3.1.2 Motion Reference

Link an object here to define a motion reference. The motion reference feature takes the position and rotation velocities from the reference object and applies them to the objects in the N.o.t.a. group. What’s special about it is the fact, that this is done time-shifted. This means: All objects in the N.o.t.a. group perform the reference object’s motion, but one after another, delayed by a certain amount of time. You can define this time period using the *Step* attribute (explained later on this page).



#### Note:

*Animate the motion reference object before linking it in the N.o.t.a. tag! If you want to change the motion reference object’s animation after linking it to the N.o.t.a. tag, disable N.o.t.a. while you’re working. Also note that this effect only works with keyframed objects, animating the reference object with CO.F.F.E.E. or XPresso will not work.*

#### 3.1.3 Duration

Define the duration of the N.o.t.a. animation *for each object* here. After you entered a value, you can immediately test the animation by clicking the Play button in the animation toolbar. The unit of this parameter is frames. Example: If your scene runs with 25 frames/sec and you want any object to take 2 seconds to reach its target position, you have to enter a duration value of “50” here.



### *3.1.4 Step*

If you don't want all objects in the N.o.t.a. group to start moving at the same time, set a value here. The Step parameter defines a pause after the start of each object, before the next object is started. The unit is again frames. Example: If your scene runs with 25 frames/sec and you want the objects to start with every half second, set a value of "12.5" here. If you want the objects to start all at the same time, set *Step* to "0".

**Note:** *This attribute also influences the motion reference function.*

### *3.1.5 Frame Offset*

This parameter delay the whole N.o.t.a. animation by the number of frames you enter here. Example: If your scene runs with 25 frames/sec and you want to start the N.o.t.a. animation after 4 seconds, set this parameter to "100".

### *3.1.6 X, Y, Z Position Lock*

If you don't want N.o.t.a. to affect the translation along a certain axis, you can use these checkboxes to exclude certain axes. If an axis is locked, it will always have the target value that is defined by a keyframe, without being animated.

### *3.1.7 H, P, B Rotation Lock*

This works like the Position Lock, but refers to the rotation of the objects. Use these checkboxes to lock certain axes to their target rotation.

### *3.1.8 Speed*

This parameter is very useful when you use N.o.t.a. on animated objects (e.g. flapping birds or walking characters): It changes the speed of the objects' local animation. Example: If you have a bird doing a complete flap in 30 frames, you can set this parameter to "0.5" to make the bird flap completely in only 15 frames.

### *3.1.9 Shift*

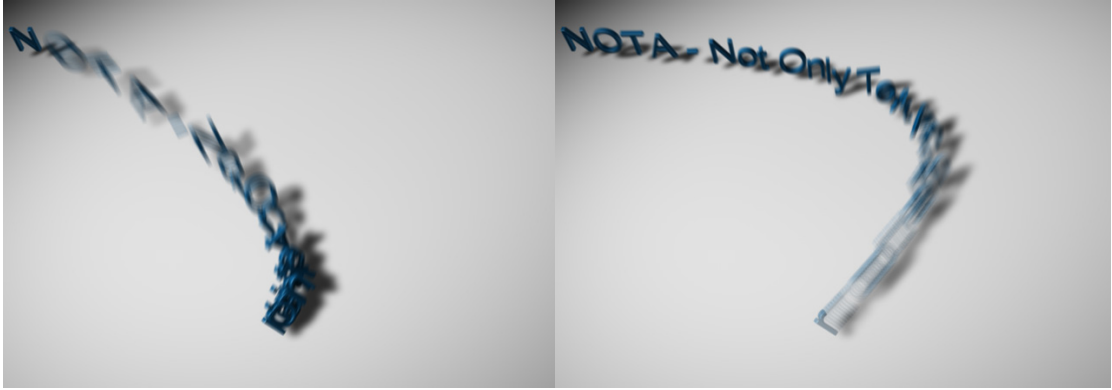
If you have several animated objects in the N.o.t.a. group, use this parameter to delay each object's local animation. Referring to the bird example, this will cause the birds to flap asynchronously.

### 3.1.10 Pos Time

This curve defines the relation of way and time of the objects' animation. Use it to create an ease-in / ease-out effect. The curve represents the whole animation, as defined by the *Duration* parameter.

### 3.1.11 Rot Time

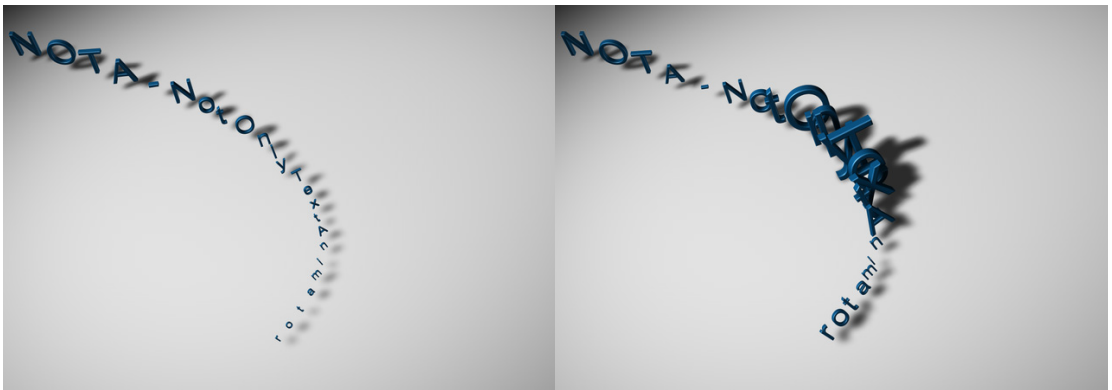
As the Pos Time parameter, Rot Time can be used to create ease-in / ease-out effects and manipulate the animation's speed and acceleration.



Two examples for ease-in / ease-out effects with different *Pos Time* and *Rot Time* curves

### 3.1.12 Scale, Max Scale, Min Scale

The *Scale* curve defines a change of scale for the objects in the course of the animation. Use this to make the objects shrink / grow while during the animation. *Max Scale* and *Min Scale* determine the minimum and maximum relative size the objects can have.



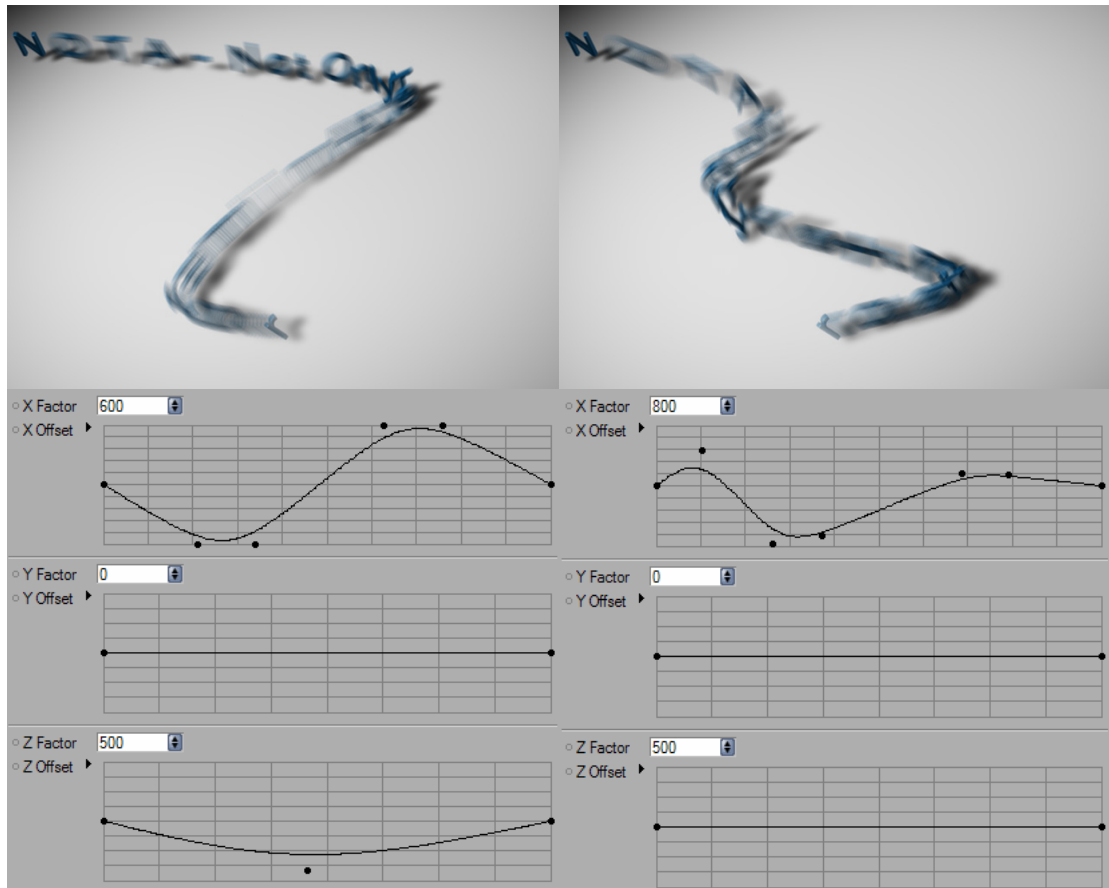
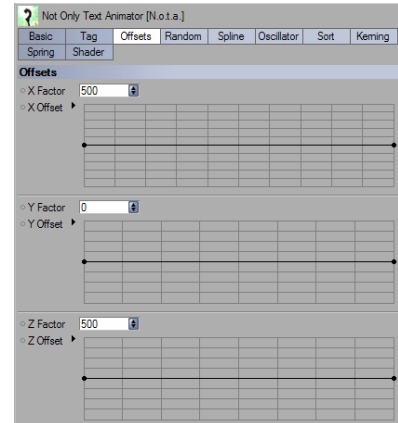
Experimenting with different scale settings and curves can lead to interesting results

## 3.2 Offsets

Offsets are an easy way to define the route your N.o.t.a. group objects will cover. If don't you want the objects to just move in a straight line, the *Offsets* tab may be the tool of choice for you.

### 3.2.1 X,Y,Z Factor / Offset

Using the offset curves, you can define an exact offset for each point of an object's animation. The lowest curve value represents an offset of "0" while the highest value of the curve will cause an offset as defined in the *X,Y,Z Factor* fields.



Examples for using the X offset

### 3.3 Random

Applying randomness will make your N.o.t.a. animation look more natural, prevent it from becoming boring and bring a unique variance in each of your N.o.t.a. animations.

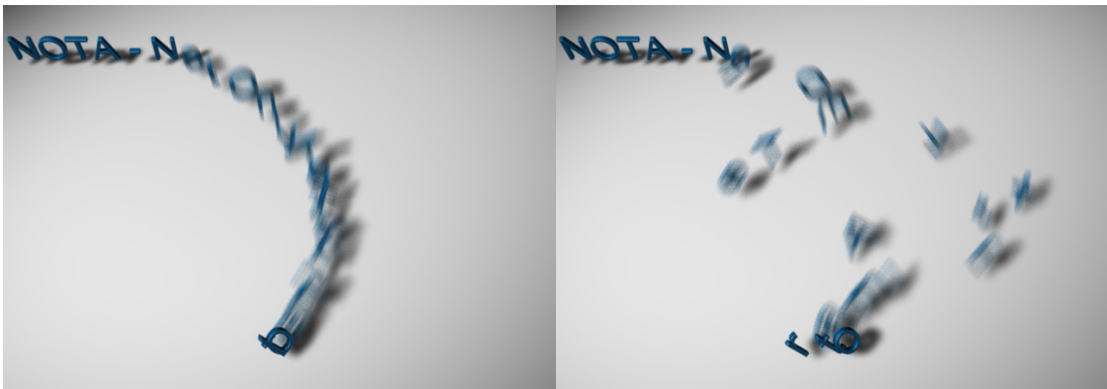
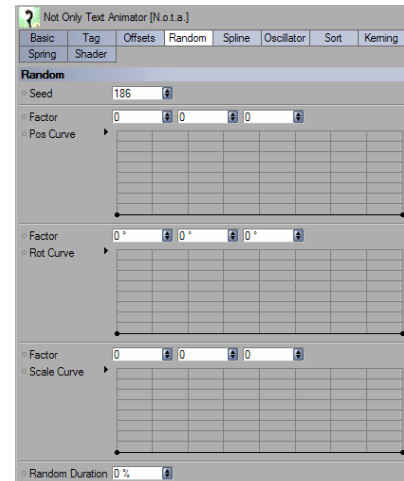
#### 3.3.1 Seed

The *Seed* is used as a start value for all random calculations in N.o.t.a.. Changing it will alter the results of any random parameters used.

#### 3.3.2 Pos Factor / Curve

Use the *Pos Factor* to determine the maximum random translation that is applied to the objects in the N.o.t.a. group. The three values represent the translation in X, Y and Z direction.

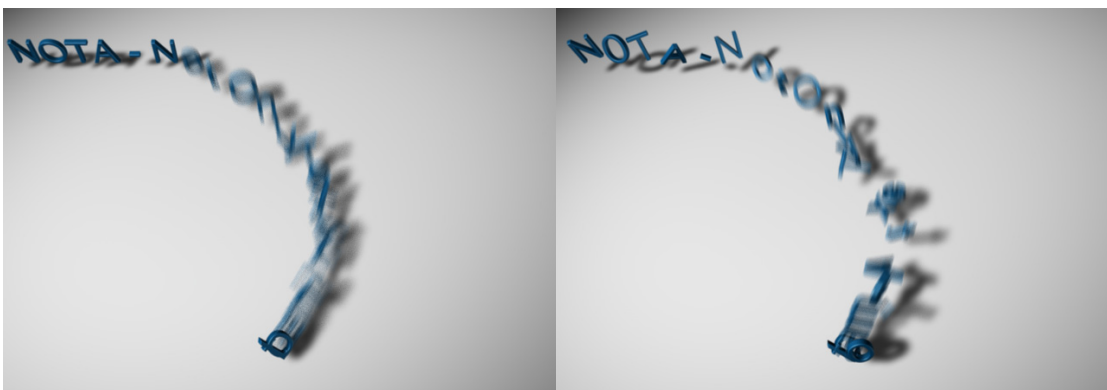
The curve defines how much randomness is applied to the objects' position. This gives you the possibility to e.g. let the objects start and stop at their normal positions while moving in a random manner.



An animation without – and with random position

#### 3.3.3 Rot Factor / Curve

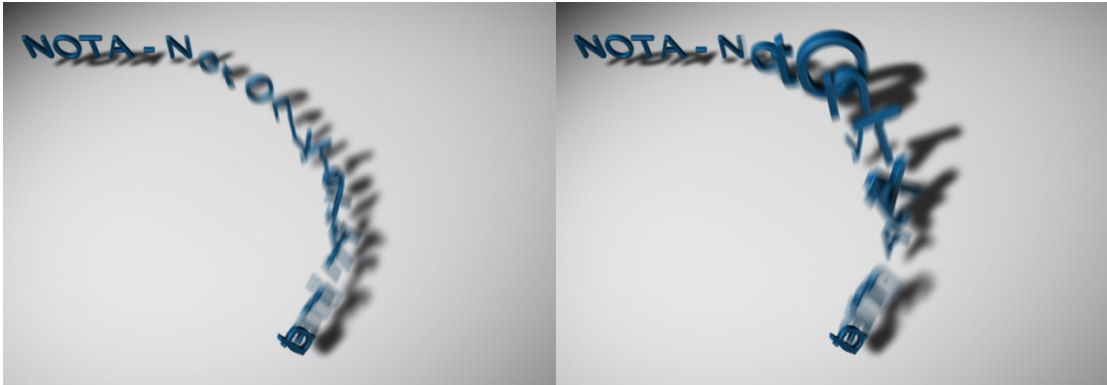
This is fairly the same as *Pos Factor / Curve*, but applies to the objects' rotation. Use the *Rot Factor* to define maximum random variance from the normal orientation and use the curve to control the strength of the randomness.



The same animation without – and with random rotation

### 3.3.4 Scale Factor / Curve

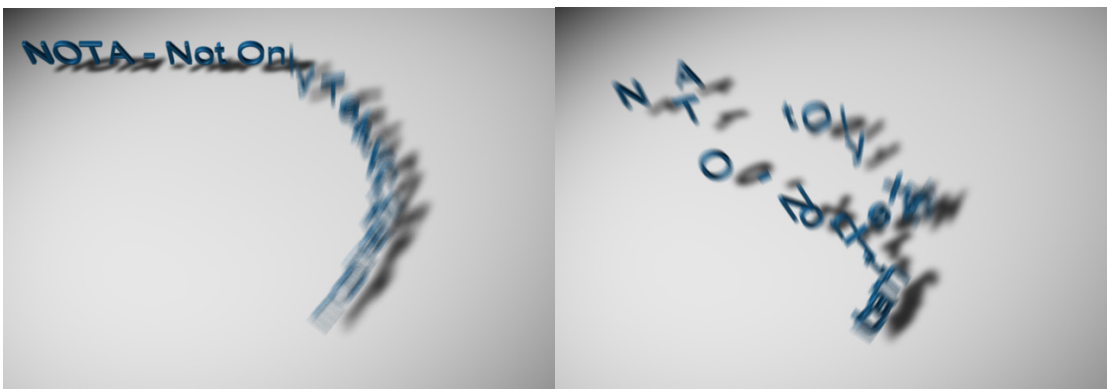
Surprisingly, these parameters work exactly like *Pos Factor / Curve* and *Rot Factor / Curve*. Use the Scale parameters to alter the scaling of the objects in the course of the animation.



The same animation without – and with random scaling

### 3.3.5 Random Duration

By default, each object's animation takes as long as defined by the Duration parameter in N.o.t.a.'s *Tag* tab. If you set a value for Random Duration, a random amount of time is added to each object's animation. Use this parameter if you want the objects to reach their goal in a random order.



An example for an animation without – and with random duration

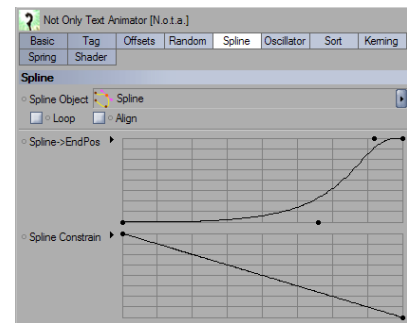
**TIP:** Make the random curves begin with a value greater than "0" to let the objects already start in random position or orientation.

## 3.4 Spline

Sometimes the Offset functions will not be sufficient for what you want to do. In this case you will want to use the spline function.

### 3.4.1 Spline Object

Drag'n'drop a spline object here which should be used for N.o.t.a. animation. All objects will then follow the spline in the course of their animation duration.



### 3.4.2 Loop

When this option is activated, each object will start again from the beginning of the spline immediately after it had reached the target position. Using the *Loop* function you can create infinite animation.

### 3.4.3 Align

Active this option to align the objects to the tangent of the spline. By default, the orientation will not be affected by the spline.

### 3.4.4 Spline -> EndPos

This curve defines the blending between spline-driven motion and target position in the course of the animation. The lower the curve is, the longer the objects will move along the spline.

### 3.4.5 Spline Constrain

This curve is used to define how close the objects are driven towards the spline. In other words: It blends the relative coordinates of the objects to each other between their keyframed position and the position given by the spline.



Examples for usage of the spline function

### 3.5 Oscillator

With the N.o.t.a. oscillator you can make your objects move periodically with a certain frequency, amplitude and phase. By default, the objects move in a sine function but you are free to create your own oscillation curves. This allows for a number of various effects that you will find out about soon when experimenting with the parameters.

#### 3.5.1 Position XYZ

These three values define the maximum amplitude of the oscillation in X, Y and Z direction. For example, input a value of "100" in the Y field to make the objects bob up and down by 100 units.

#### 3.5.2 Position Phase

This parameters shift the oscillation phase by up to one period. In other words, the Position Phase parameters determine the position in which the objects will start oscillating at the beginning of the animation.

#### 3.5.3 Position Waves

Click the black triangle here to reveal more detailed parameters for the oscillator, as described in the following:

##### 3.5.3.1 Wave X, Wave Y, Wave Z

These three curves show the functions that are used by the oscillator. By default you will see a sine in each of the curve fields, but you can of course manipulate the curves to fit your needs.

**NOTE:** Always ensure the beginning and the end of a curve are of the same value. If they are not, you will not get a smooth oscillation.

##### 3.5.3.2 Period Multiplier

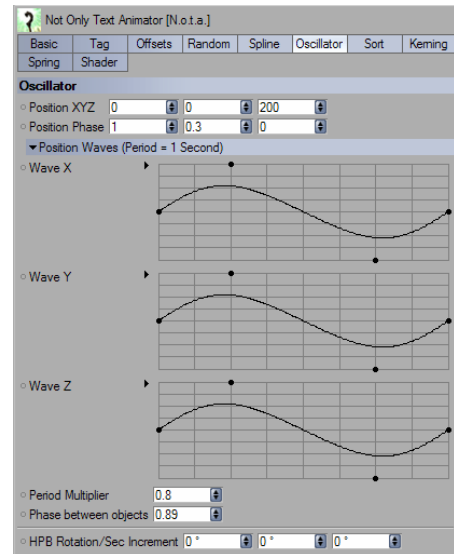
Use this value to change the frequency of the oscillation. Lower values will slow down the oscillation, while higher values will speed it up.

##### 3.5.3.3 Phase between objects

This Phase parameter will shift the phase between the animated objects. Values close to "0" or "1" will cause the objects to move in recognizable waves, while values close to "0.5" will produce results that look somehow random or even like double waves.

#### 3.5.4 HPB Rotation / Sec Increment

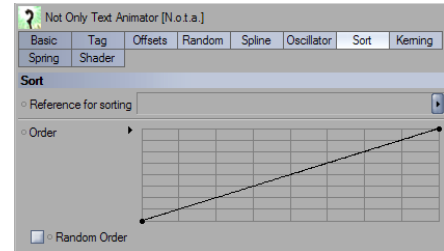
Use these three values to set an oscillation amplitude for the objects' rotation as well. Of course, this will cause the objects to rotate regularly.



Two examples of NOTA oscillation

## 3.6 Sort

This feature allows you to change the order in which the objects start their animation in a very easy yet effective way: The order is calculated from the distance between the objects and a reference object. The nearer an object's target position is located to the sorting reference object, the earlier it will start to move.



### 3.6.1 Reference for sorting

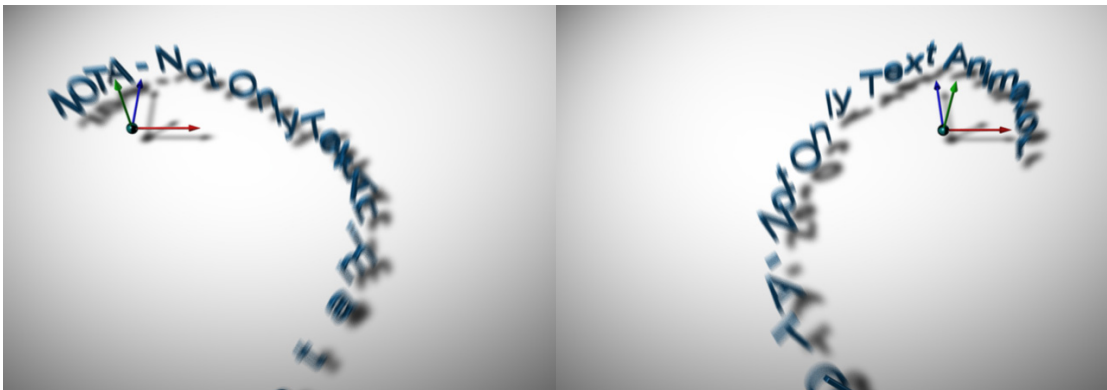
Drag'n'drop an object here that should be used as reference for sorting.

### 3.6.2 Order

Use the curve to adjust the reference object's range of action, reverse the sorting effect or even create your own custom sorting order.

### 3.6.3 Random Order

Activate this to make the order of the objects completely random. The random seed will be taken from the value you enter in *Random* tab's *Seed* parameter. While Random Order is activated, the curve can be used to control the how many objects start at the same time or after one another.



Use a sorting reference object to influence the order



### 3.7 Kerning

The kerning feature to dynamically change the distance between the objects in the N.o.t.a. group. With the help of a Null Object you can define a Kerning for X, Y and Z and control the object's influence using a spline function.

#### 3.7.1 Kerning XYZ

This vector works as a multiplier for the X,Y and Z coordinates of the reference object. Using the value "1" for a coordinate will make related kerning value equal to the reference objects position, the value "2" will double it, etc..

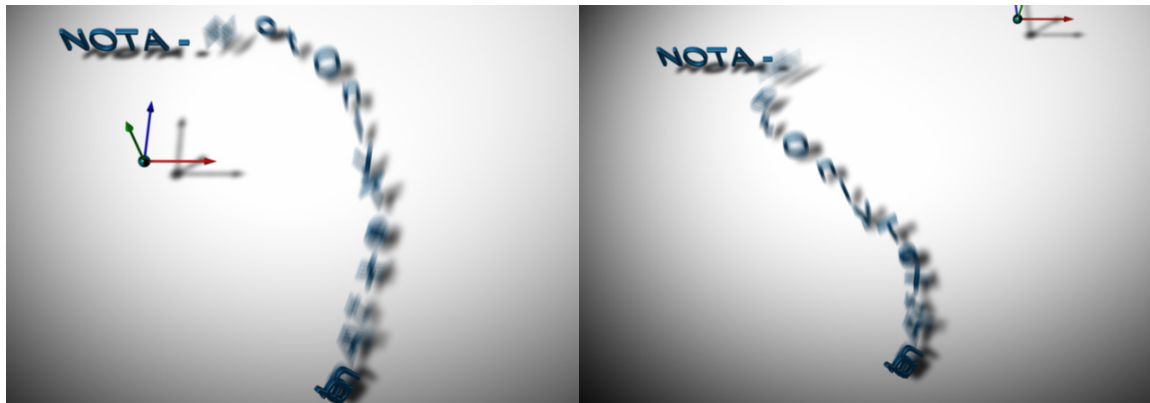
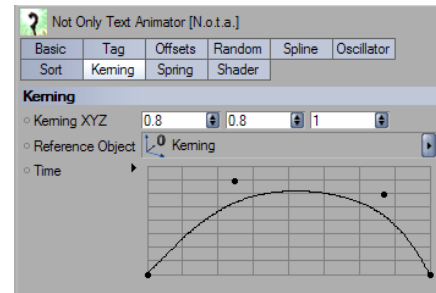
#### 3.7.2 Reference Object

Link an object here to define a kerning reference object. The X, Y and Z position coordinates of the reference object are applied (added) to X, Y and Z kerning. The proportion in which this is done is defined by the *Kerning XYZ* attribute.

E.g. if your kerning reference object is at position (100.0; -100.0; 100.0) and the *Kerning XYZ* attribute is (0.5; 0.6; 0.7) the kerning will be x=50.0; y=-60.0; z=70.0.

#### 3.7.3 Time

This spline function represents the animation duration of each object in the N.o.t.a. group. It may be used to control the kerning strength for each moment of the animation.



Different reference object positions are adding to the text's kerning in different ways.

### 3.8 Spring

The Spring function does great work when you want your objects to show some dynamic motion. You can make spring and bounce effects, or just let the objects shake a bit after they arrive at their target position. Since the spring motion is not a real dynamic simulation but a good fake, it runs very fast and is not delta-time dependant.

#### 3.8.1 Spring Duration

Defines the duration of the spring effect for each object on the N.o.t.a. group in seconds.

#### 3.8.2 Spring Coeff.

This value works like a multiplier to control the initial amplitude of the spring effect in relation to it's velocity when the spring effect begins. This means: If an object is moving with a speed of 100cm per frame when the spring effect begins, the effect will start with an amplitude of 200cm and go down to 0cm in the course of the time period defined by the *Spring Duration* attribute.

The *Spring Coeff.* attribute also influences the spring effect's frequency: A spring with a greater initial amplitude would need more swings to relax. Therefore, greater *Spring Coeff.* values result in higher spring frequencies.

#### 3.8.3 Affect Position, Rotation, Scale

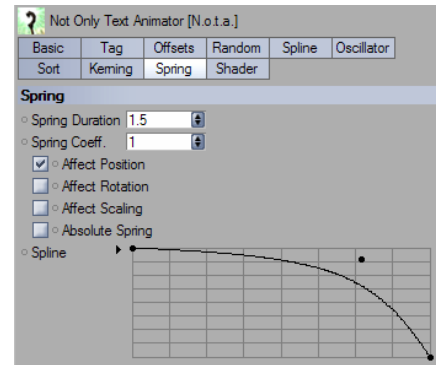
Use these checkboxes to control the spring function's influence on the position, rotation and scale of the objects.

#### 3.8.4 Absolute Spring

While by default the spring effect is soft, as if the objects in the N.o.t.a. group were attached to an elastic string, enabling this option will result in a hard spring motion. Use it to let the objects rather bump than swing, e.g. to simulate a collision of something falling on the floor.

#### 3.8.5 Spline

This spline function is used to control the spring effect's strength in the course of the spring duration. To get a natural spring effect, it should start at maximum value and go down to zero. Using rather *Inverse* functions will produce more agile springs while functions like mirrored cubic will result in a dampened, gooey motion.



### 3.9 Shader

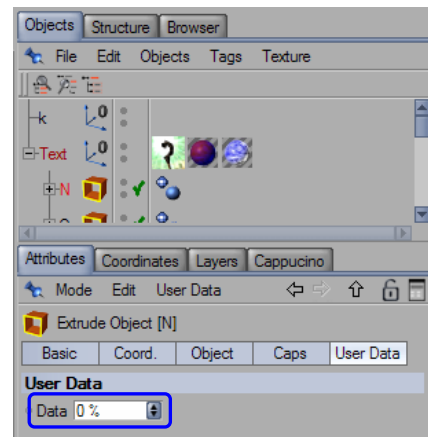
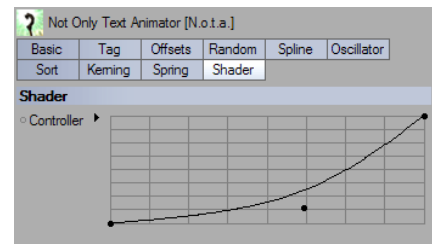
The N.o.t.a. shader is a great feature that was added in version 1.4. It gives you the possibility to influence your materials with N.o.t.a. so that you can make objects change their color, softly blend in or change any other material property while being animated with N.o.t.a.. Read more about working with the N.o.t.a. shader in chapter 4.1 and have a look at the N.o.t.a. shader demo scene.

#### 3.9.1 Controller

The controller curve controls how the duration values of the objects are translated into a position in the shader gradient. The lowest / highest values of the curve correspond with the left / right side of the shader gradient.

#### Note:

*Before using the N.o.t.a. shader, you have to do a little preparation to make it work: Select all objects in the N.o.t.a. group and create a Float User data value named "Data". By now, this is the only possibility to connect N.o.t.a. shader to the objects in the N.o.t.a. group.*

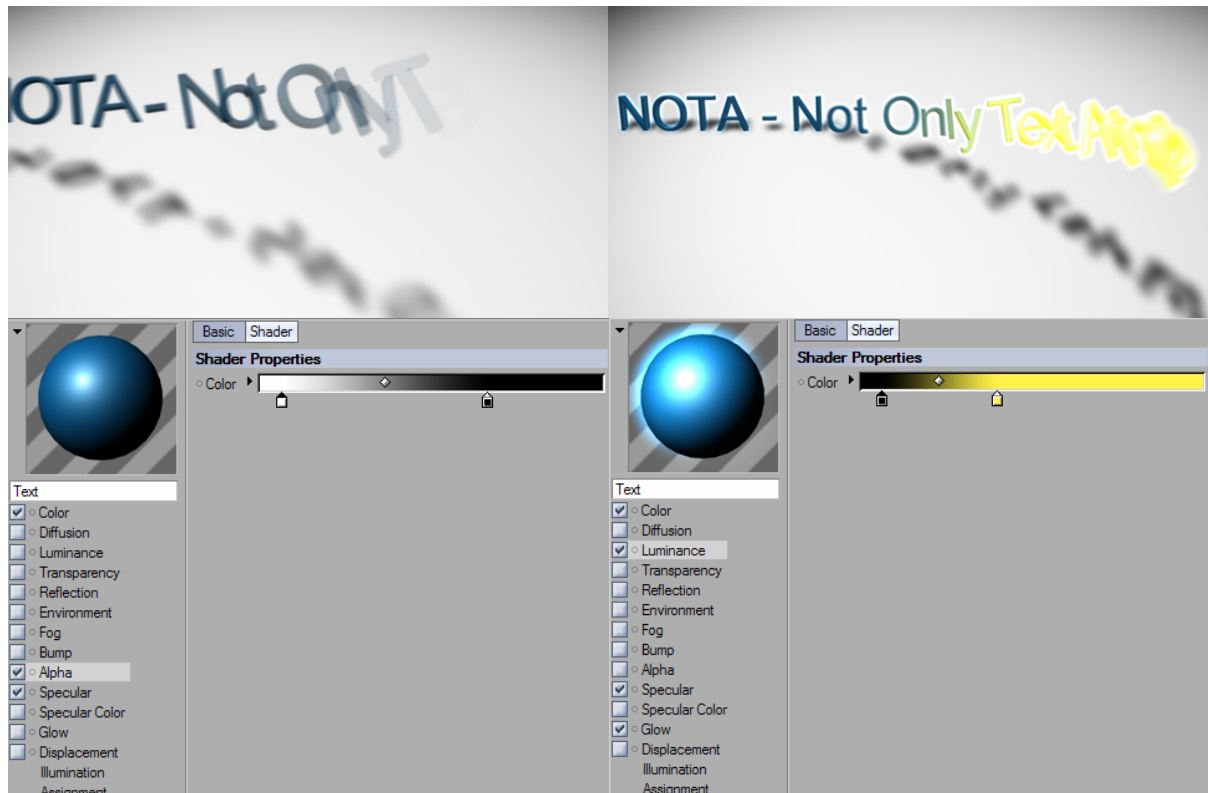


## 4 Practice

### 4.1 Using the N.o.t.a. Shader

After creating the User data values, you can access the N.o.t.a. shader from within the Material Editor by selecting it from the shader menu in every material channel that works with shaders.

You can use the N.o.t.a. shader to output a grayscale value and control transparency, alpha values or anything else that is controlled that way. Of course, the N.o.t.a. shader is not limited to grayscale values, you can create color gradients, too. That is a great way to let objects glow or change color while they move.



Two examples for using the N.o.t.a. shader.

### 4.2 Using N.o.t.a. without a start reference

It is absolutely no problem to use N.o.t.a. without a start reference object. In that case, all objects in the N.o.t.a. group don't change position or rotation, but that doesn't mean you can't apply some of the effects. In fact, almost every N.o.t.a. effect can still be used: Offsets, Random, Oscillator, Sorting and Shader are still able to do great work.

This way you can use N.o.t.a. on groups of objects that should not move. Simply leave the reference object away and make a group of objects just change size, swing a bit or disappear by using the N.o.t.a. shader.