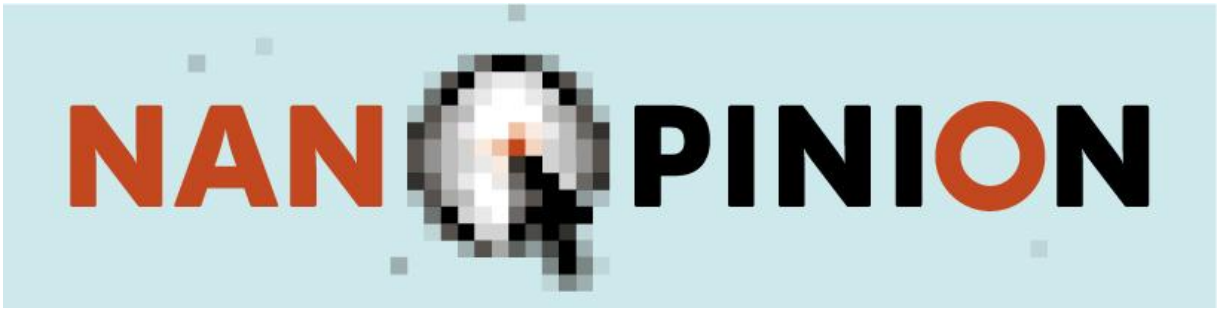


Monitoring public opinion on Nanotechnology in Europe

*European Platform on Nano Outreach and Dialogue (NODE)*
*(Grant Agreement NMP.2011.3-4-290575)*

# D3.3 Discussion Game

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**Final version – V 1.0**

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# Executive Summary

This document presents a theatrical discussion game exploring the topic of nanotechnologies. This is a new format produced specifically by and for the NanOpinion project. It uses the techniques of theatrical debate. The game is aimed at informal semi-public settings, where passers-by can participate without spending too much time. Participants get a chance to learn, explore and debate on the controversial issues around nanotechnologies. The game touches safety, regulation, ethical and health issues.

# 1. Introduction

Several Discussion Game formats, like PlayDecide[1] and Discussion Continuum were studied in order to create an approprate format for the needs of NanOpinion. An inspiration for this theatrical discussion game came from a Dutch project Nanopodium [2]and a UK porject Meet the Mighty Gene Machine[3].

Public debates often take a rather static form, characterized by a clear division of expertise and labour. The people on stage are the ones with the knowledge, the people in the audience are the seekers of knowledge. Classical science theatre follows a similar vein. A particular story of science is told to the public, possibly followed by a plenary reflection and discussion at the end. Based on this, and idea came to life that it would be worth trying to integrate the power of imagination of the theatre with the exchange of arguments. Wouldn't it be possible to create a truly interactive and experimental discussion format mixing those? That is the idea behind theatrical debate and also the idea behind the theatrical discussion game that is presented here.

The theatrical discussion game is fun, but at the same time serious. It adheres to the playfulness motto 'let's take serious things playfully and playful things seriously'. It is light-weight in the sense that it is easy for the audience to become involved and participate. The game is designed as follows. It consists of two scenes. Each scene depicts a separate aspect of the nanotechnology future, respectively new materials/ nanoproducts and new medical practices/using nanotechnology. The scene shows what that future can look like. The scene is followed by a discussion with the audience that is supported by discussion cards. After approximately 20 minutes, the next scene starts. In total, the game takes around 30-40 minutes, depending on the activity of the audience.

## *1.1. Facilitating the exchange of arguments*

There is something particular about the future of nanotechnology. First of all, we still have to imagine it and work towards it. The future is not there yet. This also means that, at least. part of the ideas we need to understand and evaluate this future are not there yet. That is why a fruitful discussion of nanotechnology needs four elements: imagination, playfulness, reflection and dialogue. Imagination is needed to let the possible futures of nanotechnology come to live. Playfulness is needed to be able to experiment with these futures and come to understanding with what we think of them. Reflection and dialogue are needed to create a framework for understanding the technology and its future.

### 1.1.1. Imagination

Imagination makes it possible for us to relate to the future of nanotechnology, to recognize it and feel connected to it. This connection is needed to start up the deliberation process. When using imagination discussion becames more focused, it does not drift away along the paths to various people's hobby horses but concentrates on problematic situations depicted on stage. It also increases the attention, makes it more easy to follow and to stay connected, possibly because multiple senses are involved.

### 1.1.2. Playfulness

Play is the way we come to understand new things. We turn them around, think about them, play with them. Playfulness creates a safe place to break out the habits and routines of our thoughts and actions. Playfulness gives us a more open and flexible way of thinking that helps to come to understand the complex, uncertain and dynamic reailty of the nanotechnology future.

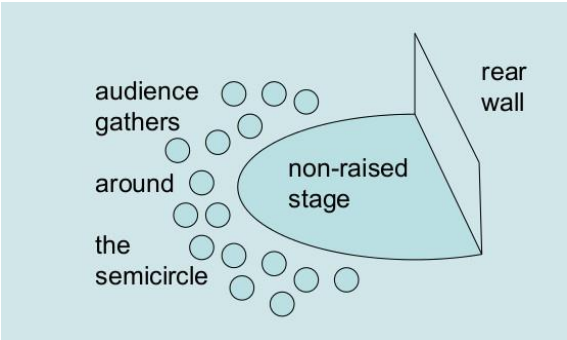
### 1.1.3. Reflection

Reflection goes two ways. First, the participants of the theatrical debate/discussion game reflect on their own values and assumptions underlying their opinions about nanotechnology. Second, the participants become aware of others' frame of references through the discussion. The resulting double vision is what is called frame reflection. This reflection is a deeper layer of common goals in science communication such as awareness and opinion-forming. If you acquire double vision through frame reflection, you become able to understand the future of nanotechnology better but also to reframe it in dialogue with others.

### 1.1.4. Dialogue

The situation shows possibilities and dilemmas that are multi-interpretable. This openness to interpretation communicates the complexity of issues such as the emergence of nanotechnology, but also gives different people form different backgrounds and perspectives the opportunity to recognise and reveal their values and assumptions. The method of the theatre thus facilitates the important and difficult task of dialogue: trying to see the point that other people make and create new horizons together.

## 2. Setting




It is very important to outline the space (imaginary stage) where the performance will take place. Do not work with a raised stage, because the created distance will block interaction during the discussions. It is best to create a half-circle of free space, preferably with a closed rear wall, with space for the audience to gather around the half-circle. If there is no rear wall, you can use room divider screens to create it.

# 3. Performers

It is highly recommended to work with 2 professional actors, ideally improvisational actors. You can find improvisational actors in many European countries at the Applied Improvisation Network (http://appliedimprov.ning.com). Another opportunity is to have one actor and one museum facilitator/explainer. You may approach local drama universities to seek for actors.

# 4. Big entrance

Before the start, actors need to gather and involve the audience – make a "big entrance". This is very important. Below you may find a few suggestions. You may use both or one of them, or you may think of something yourselves, but it is essential to do something:

1. Playfully engage people that walk by to become part of the audience, each tennis player tries to convince people to join their team (e.g. " You have to help me, my tennis buddy doesn't believe nanotechnology is good for us"/ "You have to help me, my friend tries to get me to use some nano-sunscreen but I don't want to"). Players at this stage already hand out cards (2 colours) which represent different teams and are used for the discussions. Once people gather in a circle, tennis players step back onto the "stage", take a look around the audience, check who is in their team, take a pause, then start the scene.
2. Fill small coloured balloons with air or use other soft material. Actors can use their tennis rackets to hit them into the crowd.

# 5. Materials

- 1 nano-sunscreen
- 1 traditional sunscreen (+30), needs to be white
- 1 nano food container
- 2 tennis rackets
- 2 sets of sports clothes
- Coloured thick paper
- Large A1 sheets of paper
- Post-its
- Pens

# 6. Part 1 (Script)

Part 1: Short play performed by two people mixed with discussions. The play sets the scene and the context, raising nanotechnologies issues. Performers include participants/viewers in active discussions by asking questions and providing cards with different opinions.

Part2: Participants are able to leave their comments and share their opinions on special boards. This is important to have something documented from the discussions.

Setting:
Two amateur tennis players are having a conversation in the break between training. Preferably, one is a man, the other one a woman (this can be chosen by the organisers). Player A is a PhD student in Nano-materials. Player B is his/ her friend. You may give them local names and include them in the script.

Scene I:

*The weather is hot and the players are concerned about getting sunburnt.*

A: We had a great game, let's take a short break now.

B: Yes, it's also really hot, I hope we don't get sunburnt.

A: I have a sunscreen, do you want to use some? (A applies his sunscreen.)

B: Why is your sunscreen so transparent? Are you sure it will protect you from the sun? Here, do you want to use mine? (B applies his sunscreen and it's white and thick)

A: It's a new type of sunscreen. It contains nanoparticles. It looks transparent, but it still blocks UV rays effectively.

B: Well, I prefer the traditional one, I can see it is there, which means it is protecting me well. I don't want skin cancer!

A: Actually, it is quite the opposite. Sunscreen should be applied several times during the day to be effective against sun rays. My cream protects me but it doesn't fool me. Since I can't see it, I tend to apply it more often. My skin looks good and I am well protected!

B: How do you know all of that? Is that related to your research at the university?

A: A group in my department works with nano-materials.

B: These nano-materials sound really special.

A: They are special because of their small size. At the level of atoms and molecules scientists can create materials with new extraordinary properties.

B: How small? Like a human hair?

A: No way, 10 000 times smaller, you can't see it.

B: So if they are so small they can penetrate my skin and become harmful?

A: No, scientists have done a lot of research and so far there is no evidence showing that nanoparticles in products can be harmful to consumers.

B: But I guess long term effects are still not known. What are you going to say to that?

A: You are right, nobody is sure about that as the technology is quite new. But that's why worldwide scientists are constantly studying the effect of nanoparticles.

B: Still, I wouldn't risk it. I think I'll stick to my good old white and thick cream until I am 100% sure that it's safe to use the other one.

A: Well, we'll see who looks better after I beat you today.

B: After I beat you, you mean?

A: We need to be back at the court in 10 minutes, I want to grab a little snack. (A takes out his food container and offers B a slice of an apple from it) Do you want to have a bite? (B has a bite.) A decides to tease his friend for a bit.

A: You know, this food container also contains nanoparticles.

B: You are kidding me, are you serious? I am not sure I want it anymore (B looks at the apple in despise).

A: I am serious. Some new food containers are made of plastic that contains silver nanoparticles giving it antibacterial properties. This way the food stored inside stays fresh for longer. For example, this apple has been in the container for 2 days and is still fresh.

B: (B almost spits out his apple) I don't want to eat any silver in an apple that has gone off

A: Don't say nonsense! I use it every day and still didn't turn silver. The particles are embedded in the plastic of the container and not the air inside it. I think the risks of nanotechnologies are exaggerated, nano-particles are not new, we inhale them from the exhaust of engines, cigarette smoke, hair spray and burning candles.

B: OK, OK, can we start playing tennis already? You'll be nano-size compared to the shape I'm in today.

*A and B pause in a freeze for a few seconds. Then they both turn to the audience to find the members that were in their team at the start (Are you still with me? Explain?). If the discussion does not start up automatically use the cards. Otherwise use the spontaneous flow of discussion and come back to the cards to broaden or deepen the discussion. Those participants who have red cards are asked to read the cards out loud and comment on them. Participants are offered both sunscreens and the food container to try and compare. Ask further questions to initiate a discussion.*

Red cards:

| | | | |
|---|---|---|---|
| These sounds like interesting products, I would use them. I accept the risks, given the benefits. | I would not use these products. I am concerned about using products containing nano-materials because they can be harmful. | Nanotechnologies products should be strongly regulated and only allowed onto the market after strict testing especially for long term effects in humans and the environment. | I support rapid nanotechnologies expansion with minimum regulation from the authorities. This will quickly lead to new products. |

Additional questions:

- Would you buy these products? Do you think they are safe?
- Which possible risks and benefits can you think of?
- Should research in NT spread and expand or should it be closely regulated by the authorities?
- Is there a difference between using a product that needs to be applied to the skin and those for general use?
- Can we realistically develop regulations that will govern such rapidly developing field?
- What if research centres from our country move to other countries with no regulation in order to avoid closed regulations?

Use probing questions to get to a deeper level in the discussion:

Can you explain X? What makes X important to you? Tell me more about X? What exactly do you mean by X? How do you see X? What were you thinking about when you said X? How is X related to Y? Can you give me an example of X?

Additional cards to be printed on post-its and put on the boards in Part2. Some arguments can also be used to facilitate the discussion:

1. I would use nanoproducts. But I wonder if the nanoscale form of its ingredients is safe, I want more information on this.
2. It is interesting, but before I use it I would like it to be tested specifically for safety, not only with the current safety procedures which have allowed it to be in the market.
3. Nanotechnologies products should be allowed onto the market but regulated. New regulations should appear in line with new scientific developments.
4. Nanotechnologies products on the market should be regulated by authorities, however involving public dialogue.

Scene II:

*After the discussion following scene I, the actors move on to play scene II. Actor B takes over at once, walks back on to the centre of the stage, starting an interior monologue. The monologue is hesitant at first, but gradually becomes more and more enthusiastic about the possibilities of nanoscience. B walks to the front end of the stage, enlarges his/ her body to express enthusiasm. Preferably, B incorporates main arguments about risks and benefits uttered by the audience in the discussion of scene I.*

B: This nanoworld. It's really a miracle. Although it may go so far. It can really change our lives. If you can make the molecules and structures you want, you can make everything. But on the other hand, who knows what the effects will be in the long term! We might all die. But, if scientists are able to improve sunscreens and lunch boxes, wouldn't they also be able to fight diseases and improve our health? Imagine what that could mean? A technological cure for…who knows what. Cancer, or just a cold.

A: In theory... in theory... we are not there yet. Lots of research still needs to be done.

B: (interrupting A enthusiastically) But imagine! I mean it can be used in medicine right?

A: Yes of course. It already has some medical applications. In the future nano-scientists might even be able to improve human memory or slow down the ageing process.

B Stop ageing. Wow, I do want to live forever. That sounds great!

A: It all sounds great, but there are some ethical concerns related to this. Do we have the right to interfere with nature?

B: But isn't that what progress is about? Your nanotechnologies can make us feel better, work harder, live better lives!

A: I'm not sure if everybody wants that kind of change. People might feel that science tampers with their personality, their identity as a human being.

B: OK, but aren't identities changeable? Don't they change anyway?

A: And if this technology spreads, this will only enlarge the gap between poor and rich. As only those who would be able to afford it, could benefit from it.

B: Oh come on! Now YOU are the one trying to slow down innovation.

*A turns to the audience. Now the roles have switched (and A became more sceptical), A needs to find new backup in the audience (Who's with me? Can you explain?). If the discussion doesn't start up automatically, use the cards. Otherwise, use the spontaneous discussion flow and come back to the cards to broaden or deepen the debate. Those participants who have blue cards are asked to express their opinion on what they have read. Discussion continues, actors asks further question.*

Blue cards:

| | | | |
|---|---|---|---|
| I think ethical questions are not of primary concern. They will get solved by themselves within time. | Ethical questions around nanotechnologies should be considered only in case of strong opposition by the public. | Nanotechnologies are ethically neutral and independent of the background of scientists involved. | Research should always take ethical consequences into account. Research should only be conducted once concerned parties approve it. |

Additional questions:

- Will those without enhanced bodies not be discriminated against?
- How can we make sure that new technology does not enlarge the gap between poor and rich?
- Where is the line between curing diseases and making our bodies better? Is there a difference between changes to your body and changes to your mind or to your personality?
- How important is individual choice versus the state of society?
- Who and how should ethical questions be discussed?

Use probing questions to get to a deeper level in the discussion:

- Can you explain X? What makes X important to you? Tell me more about X? What exactly do you mean by X? How do you see X? What were you thinking about when you said X? How is X related to Y? Can you give me an example of X?

# 7. Part 2 (Feedback)

Participants of the discussion are now invited to speak to the performers if they wish to discuss things further. They are also asked to leave their opinions/comments on specially designed boards which collect information from all participants in all sessions through the day. The board will contain some pre-printed post-its with the same text as in the coloured cards.

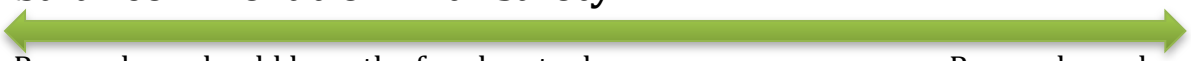
"Place your answers on the scale"

**Would you use products that contain nanoparticles?**

I would use them — I would not use them

<Comments from public>

**How should nanotechnologies products be regulated to balance innovation with safety?**



Researchers should have the freedom to do what they think is best

Researchers should follow strict regulations

<Comments from public>

**Do we need ethical debates around nanotechnologies?**

There is no need for ethical debates

There should be no research before ethical issues are broadly and publicly discussed

<Comments from public>

# 8. Evaluation

This discussion game will be played at Streetlabs withing the NanOpinion porject. It will be evaluated as part of the general evaluation of Streetlabs. There are two instruments for the evaluation of the streetlabs and live events:

- The Live event questionnaire
- The Live event reporting template

The Live event questionnaire will be filled in by visitors of Streetlabs. With the minimum number of at least 100 per Streetlab (preferably filled in by all visitors). It is a short paper questionnaire available in all project languages, which will give an overview of participants' feedback. The live event questionnaires will be distributed to the participants of Streetlabs. Small souvenirs will be provided for visitors who return the questionnaire. The collected and filled-in paper questionnaires will be digitalised

The Live event reporting template will be filled in by the observer/animator/moderator of the Streetlab. The streetlab report will summarise the main lessons learned from the project's innovative outreach activities, including the discussion game. It will help better understand what worked fine at the streetlab and what would need to be improved in future.

All this data will be collected and analysed by WP6.

# References

[1] http://www.playdecide.eu/
[2] http://www.nanopodium.nl
[3] http://www1.uwe.ac.uk/research/sciencecommunicationunit/projecthighlights/meetthegenemachine.aspx