

## Scientific Report of 2<sup>nd</sup> visit through EURO-XPRAG travel grant no 3811

The objective of the second visit of Assimakopoulos to Tomlinson and Bott at Cardiff was to finalise and run the second experiment as well as discuss in more detail the results of the first one that will be presented at the forthcoming XPrag conference in Barcelona. Building on the dataset of the 1<sup>st</sup> experiment, we prepared a second list of natural data (see attached), comprising 76 triples of sentences (with a nonsensical, literal and a pragmatically enriched, narrower or metaphorical version). This time, however, we included a context sentence with a view to see whether this would facilitate the comprehension of the enriched expression, as Noveck et.al. (2001) have suggested. Also, instead of controlling for the final lexical item under question, we now controlled for the context, keeping it the same across the literal and figurative conditions for each item. We then ran the experiment counterbalancing the sentences between the participants. In this respect, much like in the previous experiment, half participants would be presented with half the enriched and half the figurative sentences and the other half would be presented with the rest, while in each group, half would be presented with the 'Sense' option on the left of the screen and the 'Nonsense' one on the right and vice versa. Additionally, we compiled a list of the figuratively used items with a view to ask the participants to evaluate them in terms of conventionality on a scale of 1 to 7. In this respect, we will be able to cross-check our results with the ones provided by Jones and Estes (2006), the paper from which we have borrowed our metaphor items. So far, we have already collected data from 12 participants and Tomlinson will continue to collect them in the following two weeks so that we incorporate some preliminary results in our poster for the XPrag conference. All in all, this visit should conclude the first part of the experiment, which aims at cross-checking the ways in which the computation of the literal meaning of a lexical item relates to the processing of a metaphorical or narrower interpretation of it in context, using the novel mousetracking paradigm. This will pave the way for the second part of our study that will focus even more closely on the on-line processing of lexical meaning adjustment, through the use of a more creative technique that will incorporate pictures in our task. The preparation for this, along with the drafting of a paper on the first experiment's results will be the main aims of the forthcoming third visit of Tomlinson to Assimakopoulos at the University of Granada.

### References:

- Jones, L.L. & Estes, Z. (2006) 'Roosters, robins, and alarm clocks: Aptness and conventionality in metaphor comprehension', in *Journal of Memory and Language* 55: 18-32.
- Noveck, I., Bianco, M. & Castry, A. (2001) 'The costs and benefits of metaphor', in *Metaphor and Symbol* 16: 109-121

### Appendix: Sentences used in the experiment

#### A. Narrowing

I heard Todd bought himself a luxurious apartment in central London. The man has money.  
I heard Todd bought himself a luxurious apartment in central London. The man has wealth.  
Jim has a terrible sense of humour and can get really offensive. The man has rain.

Susan is 40 years old and really sad about being single. She wants to meet a bachelor.  
Susan is 40 years old and really sad about being single. She wants to meet someone nice.  
Marcia is very interested in getting to know other cultures. She wants to meet a sandwich.

Tom is the best student I have ever taught and gets the highest grades. He has a brain.  
Tom is the best student I have ever taught and gets the highest grades. He has a scholarship.  
Austin is always bragging about his stamps collection. He has a window.

Jason is a senior executive at a multinational company. After work he goes out to drink.  
Jason is a senior executive at a multinational company. After work he goes out to eat.  
Anthony is a heavy smoker and hates that he can't smoke in the office. After work he goes out to delude.

On her birthday, Sarah invited us over for dinner. The main course was a bird.  
On her birthday, Sarah invited us over for dinner. The main course was a stew.  
We had lunch at that Indonesian restaurant on High Street. The main course was a car.

We had to take our daughter to the doctor yesterday. She had a temperature.  
We had to take our daughter to the doctor yesterday. She had a toothache.  
Becky was really hungry and went to the canteen. She had a sauna.

The trainee chef didn't have a lot of experience so we left him aside. We gave him a cake to cut.  
The trainee chef didn't have a lot of experience so we left him aside. We gave him a cake to eat.  
The dog kept barking all night long and we had to make him stop. We gave him a cake to explode.

We went to the new Chinese restaurant last week and everything looked delicious. We had pancakes filled with duck.  
We went to the new Chinese restaurant last week and everything looked delicious. We had pancakes filled with rice.  
We visited the National Museum and then went to a nice French bistro. We had pancakes filled with petrol.

I was surprised to see how traditional all the furniture in John's house looked. All the beds were made of pine.  
I was surprised to see how traditional all the furniture in John's house looked. All the beds were made of wood.  
We had a quick coffee and headed towards our hotel to check in our rooms. All the beds were made of tunnels.

My sister was away for a week and I moved to her apartment. I had to feed her fish.  
My sister was away for a week and I moved to her apartment. I had to feed her pet.  
My cousin was on the phone and asked me to do her a favour. I had to feed her wall.

You can't drive from London to Madrid in a day. It is a distance.  
You can't drive from London to Madrid in a day. It is far away.  
You should finish your homework before going to bed. It is a table.

Laura is looking forward to going to the house party. She'll wear her new heels.  
Laura is looking forward to going to the house party. She'll wear her new shoes.  
Sonia wouldn't miss the chance to go to the movie premiere. She'll wear her new seagulls.

Nora couldn't convince her son to eat anything else for dinner. He always had corn.  
Nora couldn't make her son to eat anything else for dinner. He always had snacks.

Carl started working out every morning to lose some weight. He always had clouds.

Agatha always had a thing for 80's rock musicians. Her favourite band had hair.

Agatha always had a thing for 80's rock musicians. Her favourite band had keyboards.

Tricia was always a fan of heavy metal music. Her favourite band had bricks.

Miranda doesn't mind that she won't be able to become a model. She likes to eat.

Miranda doesn't mind that she won't be able to become a model. She likes to study.

My daughter is having so much fun with the doll you got her. She likes her turbo.

The singer's performance immediately impressed the judges. She has a voice.

The singer's performance immediately impressed the judges. She has many talents.

When the model came on the runway, the audience started cheering her on. She has a gulp.

Joshua can't come to the phone right now because he is out with his friends. He's getting a pint.

Joshua can't come to the phone right now because he is out with his friends. He's getting a car.

Ken should be back to the office. He's getting a tongue.

I need to talk to Leslie in person, but my place is half an hour away from her flat. It's going to be a walk.

I need to talk to Leslie in person, but my place is half an hour away from her flat. It's going to be a hassle.

I'd like to call my grandmother to check up on her, but my phone is missing. It's going to be a dinosaur.

Last night Marcus prepared an amazing meal. We knew he could cook.

Last night Marcus prepared an amazing meal. We knew he could impress.

Last month James won the tennis tournament. We knew he could swim.

Ken has been cycling for about 10 years so don't worry about him signing up for the Tour de France. Obviously, he has legs.

Ken has been cycling for about 10 years so don't worry about him signing up for the Tour de France. Obviously, he has stamina.

Graham was been working 60 hours per week for the past 25 years. Obviously, he has spiders.

The businessman stood up and handed over a check for 1 million pounds to the charity representative. He has a heart.

The businessman stood up and handed over a check for 1 million pounds to the charity representative. He has a fortune.

The wealthy man saw the beggar and handed him whatever he had in his wallet. He has a chair.

Troy is visiting me all the time now that I am in the hospital. He is a friend.

is visiting me all the time now that I am in the hospital. He is a samaritan.

I might have been unfair towards Stan during the court trial, but he is still supporting me. He is a bull.

Simon sold his old Volkswagen and bought an expensive Porsche. He finally has a car.

Simon sold his old Volkswagen and bought an expensive Porsche. He finally has a convertible.

Stewart went to the doctor to get his blood test results. He finally has a cockroach.

The pop singer received a lot of criticism for her appearance at the animal rights concert. She was dressed in mink.

The pop singer received a lot of criticism for her appearance at the animal rights concert. She was dressed in leather.

The First Lady attended the conference from beginning to end. She was dressed in air.

Lucy was really excited about her son's two goals in the football game. He sure can play.  
Lucy was really excited about her son's two goals in the football game. He sure can boast.  
Michael is a very good football player. He sure can write.

Even though he was captured by the soldiers, Lewis managed to escape their custody. He felt he was a man.

Even though he was captured by the soldiers, Lewis managed to escape their custody. He felt he was so lucky.

Nick thought that he had mistreated his wife when he yelled at her. He felt he was a bun.

Edward has his tea everyday at 5pm. He is such an Englishman.

Edward has his tea everyday at 5pm. He is such a tea-lover.

Tim could speak French and German by the time he was 14. He is such a dust.

During the ballroom dancing competition, everybody was watching Chris and his partner perform. They sure can dance.

During the ballroom dancing competition, everybody was watching Chris and his partner perform. They sure can win.

The commentator just said that they are the best football team this year. They surely can land.

Craig is a really old-fashioned guy with a lot of money. He is now looking for a housewife.

Craig is a really old-fashioned guy with a lot of money. He is now looking for a limousine.

Gareth wants to buy the trendiest furniture for his new flat. He is now looking for a spacebar.

Examples adapted from Rubio Fernandez

We were snowed in and had to make a fire to keep us warm. We used the broken chair.

We were snowed in and had to make a fire to keep us warm. We used the fire wood.

We needed to make something quick to eat. We used the sofa.

Tim was feeling nauseous after the long boat trip and needed something to calm down. So, he had tea at breakfast.

Tim was feeling nauseous after the long boat trip and needed something to calm down. So, he had tea at night.

Toby had already had three cups of coffee in the morning. So, he had tea at sports.

My brother sent me an amazing picture of his newborn. I put it in a frame of brass.

My brother sent me an amazing picture of his newborn. I put it in a frame of yours.

I just received a copy of our picture at my brother's wedding. I put it in a frame of locus.

Jack took his girlfriend for a walk along the beach last night. The moon was shaped like a banana.

Jack took his girlfriend for a walk along the beach last night. The moon was shaped like a crescent.

Francesca was sad that she couldn't go to the beach last night. The moon was shaped like a monitor.

We were playing scrabble and Sheila put down the weirdest word. I had to look it up in an encyclopedia.

We were playing scrabble and Sheila put down the weirdest word. I had to look it up in a hurry.

I came across this article about toner, but I didn't know what toner is. I had to look it up in an oven.

Samuel is thinking about buying a new car. He went for a test drive in a Mercedes.

Samuel is thinking about buying a new car. He went for a test drive in a dealership.  
Henry is trying to decide which car to buy. He went for a test drive in a journal.

After having dinner Mary was extremely tired. She quickly changed into her slippers.  
After having dinner Mary was extremely tired. She quickly changed into her pyjamas.  
Ruth finished cooking dinner and took off the apron. She quickly changed into her bathroom.

The young zebras were fooling around in the tree shadow. They didn't notice the hiding cheetah.  
The young zebras were fooling around in the tree shadow. They didn't notice the hiding photographer.  
The polar bears were behind bars at the zoo. They didn't notice the hiding toothbrush.

There was a lot of turbulence over Germany. So, we headed towards Norway.  
There was a lot of turbulence over Germany. So, we headed towards west.  
The local guy had given wrong direction. So, we headed towards purgatory.

Anna got straight As in all her courses this semester and was very happy. She bought a bottle of champagne.  
Anna got straight As in all her courses this semester and was very happy. She bought a bottle of water.  
Sally went shopping with her sister today. She bought a bottle of credit.

### **Metaphors**

#### *Conventionality rating over 4.0 (Jones & Estes 2006)*

It has been shown that children are able to acquire a massive amounts of new words while growing up. Their memory is a warehouse.

It has been shown that children are able to acquire a massive amounts of new words while growing up. Their memory is always expanding.

Research has shown that dolphin can memorise up to a few hundred words. Their memory is a coffee.

Tony's mother keeps complaining about how disorganised he is. His bedroom is a dump.  
Tony's mother keeps complaining about how disorganised he is. His bedroom is untidy.  
Troy bought an amazing new flat with huge rooms. His bedroom is a cinnamon.

Tina always felt safe when her husband hugged her. His arms are steel.  
Tina always felt safe when her husband hugged her. His arms are strong.  
Brandon has been working out a lot lately. His arms are turquoise.

Matt made a fortune after selling his patent to Microsoft. Sometimes ideas can be diamonds.  
Matt made a fortune after selling his patent to Microsoft. Sometimes ideas can be profitable.  
Bradley had a brilliant idea about a new GPS receiver chip. Sometimes ideas can be chocolate.

After putting up with her whining the whole morning, Ross started yelling at her. His anger was a volcano.  
After putting up with her whining the whole morning, Ross started yelling at her. His anger was getting worse.  
While watching his girlfriend talking to the handsome guy Cooper started fidgeting. His anger was a shampoo.

The professor explained the complicated system behind birds' flying ability. To him birds are airplanes.  
The professor explained the complicated system behind birds' flying ability. To him birds are

complex.

The student couldn't understand the lecture on the evolution of birds. To him birds are Stockholm.

The manager got really angry when he caught the workers smoking on the job. He shouted that time is money.

The manager got really angry when he caught the workers smoking on the job. He shouted that time is sparse.

Regardless of what his wife told him, the driver kept driving fast and recklessly. He shouted that time is sugar.

Tania wants to quit her job but she knows she won't find another one that pays as well. It seems many jobs are jails.

Tania wants to quit her job but she knows she won't find another one that pays as well. It seems many jobs are underpaid.

Patricia felt lucky about getting that prestigious position at HSBC. It seems many jobs are tomatoes.

Brenda spent a lot of time holding and caressing her cat when she was younger. Its fur was silk.

Brenda spent a lot of time holding and caressing her cat when she was younger. Its fur was soft.

Donna carefully took the newborn kitten in her arms and started caressing it. Its fur was ajar.

My mum and dad started telling about how they met and fell in love. Love is a journey.

My mum and dad started telling about how they met and fell in love. Love is a feeling.

Romeo and Juliet clearly shows that you need to surrender yourself to true love when you find it. Love is an oak.

It is important for school girls to understand that an extremely thin body is not necessarily a healthy body. Some fashion models are twigs.

It is important for school girls to understand that an extremely thin body is not necessarily a healthy body. Some fashion models are anorexic.

When she was five years old Paula wanted to become a successful model, but then changed her mind. Some fashion models are plugs.

If I hadn't studied political science, I wouldn't have managed to become a diplomat. A college degree can be a doorway.

If I hadn't studied political science, I wouldn't have managed to become a diplomat. A college degree can be a necessity.

She decided to change her course from law to psychology. A college degree can be a sunburn.

Every time the actress smiled during the interview, the camera would only show a close up of her face. Some smiles are magnets.

Every time the actress smiled during the interview, the camera would only show a close up of her face. Some smiles are beautiful.

I can't stop looking at my niece's face while she's watching that kids film. Some smiles are chalk.

When Madonna came on stage to perform her new song everybody started applauding her. The cheering crowd was thunder.

When Madonna came on stage to perform her new song everybody started applauding her. The cheering crowd was happy.

The concert had finished, but the audience kept asking for more. The cheering crowd was sand.

I would have never gotten over my alcohol problem, if it weren't for Jarrett. A best friend is an anchor.

I would have never gotten over my alcohol problem, if it weren't for Jarrett. A best friend is an asset.

I can tell Melissa everything, as I've known her since we were in first grade. A best friend is a keyboard.

After getting married, Alex could rarely go out to the pub with his mates. His marriage was a short leash.

After getting married, Alex could rarely go out to the pub with his mates. His marriage was a bad idea.

My grandfather announced to me that he would be getting a divorce. His marriage was a long giraffe.

It always makes my day when I call my husband's office and his cheerful secretary answers the phone. She is a breath of fresh air.

It always makes my day when I call my husband's office and his cheerful secretary answers the phone. She is a nice and positive person.

You can't help but like Jennifer when you first meet her. She is a nice piece of glass.

You can't force Julia to love that guy, just because he is rich. Love is a flower.

You can't force Julia to love that guy, just because he is rich. Love is an emotion.

Any mother will instinctively love her baby. Love is a crisp.

After the end of the ballet show, little Melinda thought that she wanted to become a ballerina.

To her, dancers are butterflies.

After the end of the ballet show, little Melinda thought that she wanted to become a ballerina.

To her, dancers are beautiful.

Catherine took us to the theatre to watch a modern dance performance. To her, dancers are cups.

*Conventionality rating below 4.0 (Jones & Estes 2006)*

I don't think I could handle another day at that wild African safari park. That adventure was a rollercoaster.

I don't think I could handle another day at that wild African safari park. That adventure was a fiasco.

I was so happy to be back home after visiting the theme park. That adventure was a handbag.

All the politicians criticised harshly the monarch's decision to kill the innocent tourists. The bad news was an earthquake.

All the politicians criticised harshly the monarch's decision to kill the innocent tourists. The bad news was a surprise.

The reporter confirmed that the distinguished chemist had passed away. The bad news was a keychain.

Emma felt so hurt when she found out that her husband was having an affair. His lie was a dagger.

Emma felt so hurt when she found out that her husband was having an affair. His lie was a startle.

I found out that Colin went to the party with another girl, when he told me he wouldn't go. His lie was a belt.

After the blizzard, Sam decided to leave his car at home and walk to work. His driveway was an ice rink.

After the blizzard, Sam decided to leave his car at home and walk to work. His driveway was an ice rink. His driveway was a potential hazard.

Philip decided not to leave because he doesn't like driving in snow. His driveway was a space shuttle.

I can't stand children constantly yelling and that is why I could never become a kindergarten teacher. A kindergarten class is a zoo.

I can't stand children constantly yelling and that is why I could never become a kindergarten teacher. A kindergarten class is too noisy.

I was hired as a teaching assistant but I really don't want to work with children. A kindergarten class is a sofa.

I heard the other day that the average person only uses a tiny percentage of his cognitive potential. The mind is an arena.

I heard the other day that the average person only uses a tiny percentage of his cognitive potential. The mind is powerful.

We just received a research grant to look into the cognitive basis for object recognition. The mind is a t-shirt.

I always do my grocery shopping online to avoid the commotion at the supermarket. Most supermarkets are jungles.

I always do my grocery shopping online to avoid the commotion at the supermarket. Most supermarkets are crowded.

My grandmother prefers shopping at her local grocery store rather than the supermarket. Most supermarkets are pigeons.

Tommy was very dissatisfied with his courses this year. His computer course is a joke.

Tommy was very dissatisfied with his courses this year. His computer course is a requirement.

Travis is very worried about tomorrow's exam. His computer course is an earring.

My grandfather always gets up at seven in the morning to go feed his chickens. The rooster is his alarm-clock.

My grandfather always gets up at seven in the morning to go feed his chickens. The rooster is his fattest.

When my grandson comes to my farm he loves chase around the animals. The rooster is his plastic.

Helen still couldn't believe that her husband took her on a surprise trip to Barbados. He is a gem.

Helen still couldn't believe that her husband took her on a surprise trip to Barbados. He is a darling.

Judie couldn't believe that her boyfriend had bought her a car for her birthday. He is a trunk.

It is essential for children to go to school in order to develop their analytic skills and knowledge. Education is a lantern.

It is essential for children to go to school in order to develop their analytic skills and knowledge. Education is a necessity.

Our charity is gathering donations that will enable it to help build more schools in Africa.

Education is a snowflake.

The doctor warned me that most smokers face respiratory problems at some point in their lives. Smoking is a time bomb.

The doctor warned me that most smokers face respiratory problems at some point in their lives. Smoking is a bad habit.

I had warned Patrick that his nasty habit would cause him trouble. Smoking is a window cleaner.

Jenny told me that I am unreliable because I was 10 minutes late for work. Her insults are razors.



Jenny told me that I am unreliable because I was 10 minutes late for work. Her insults are hurtful.

After their car crash Samuel got into a big fight with Sandra. Her insults are burgers.

I really enjoyed Meryl Streep's performance as the bad witch. Her unflinching gaze was ice.  
I really enjoyed Meryl Streep's performance as the bad witch. Her unflinching gaze was convincing.

The actress played one of the most interesting characters in the Lord of the Rings films. Her unflinching gaze was folded.

After spending every night in the lab Harry was having second thoughts about pursuing a PhD.  
Research is mountain climbing.

After spending every night in the lab Harry was having second thoughts about pursuing a PhD.  
Research is endless commitment.

I didn't plan to follow an academic career but my profound interest in philosophy led me there.  
Research is car washing.

I really don't want to go to Watson's class tomorrow morning. His lectures are sleeping pills.  
I really don't want to go to Watson's class tomorrow morning. His lectures are poor quality.  
While I was an undergraduate, it was Dr Sutton's classes that I enjoyed the most. His lectures are good kissers.

My brother can eat a whole turkey in a single serving. His stomach is a barrel.

My brother can eat a whole turkey in a single serving. His stomach is enormous.

We had to take our dog to the vet yesterday. His stomach is an apron.

Luke was surprised to see that the beavers had finished building their small dam in two days.  
They really are lumberjacks.

Luke was surprised to see that the beavers had finished building their small dam in two days.  
They really are hard-working.

The computer company just presented the new line of internet tablets. They really are sinks.

We had many chances to score during the game, but the ball was always stopped. That goalie is a spider.

We had many chances to score during the game, but the ball was always kept out. That goalie is top class.

The coach really wanted to get Roberts in the team. That goalie is an antenna.