PersonalityML

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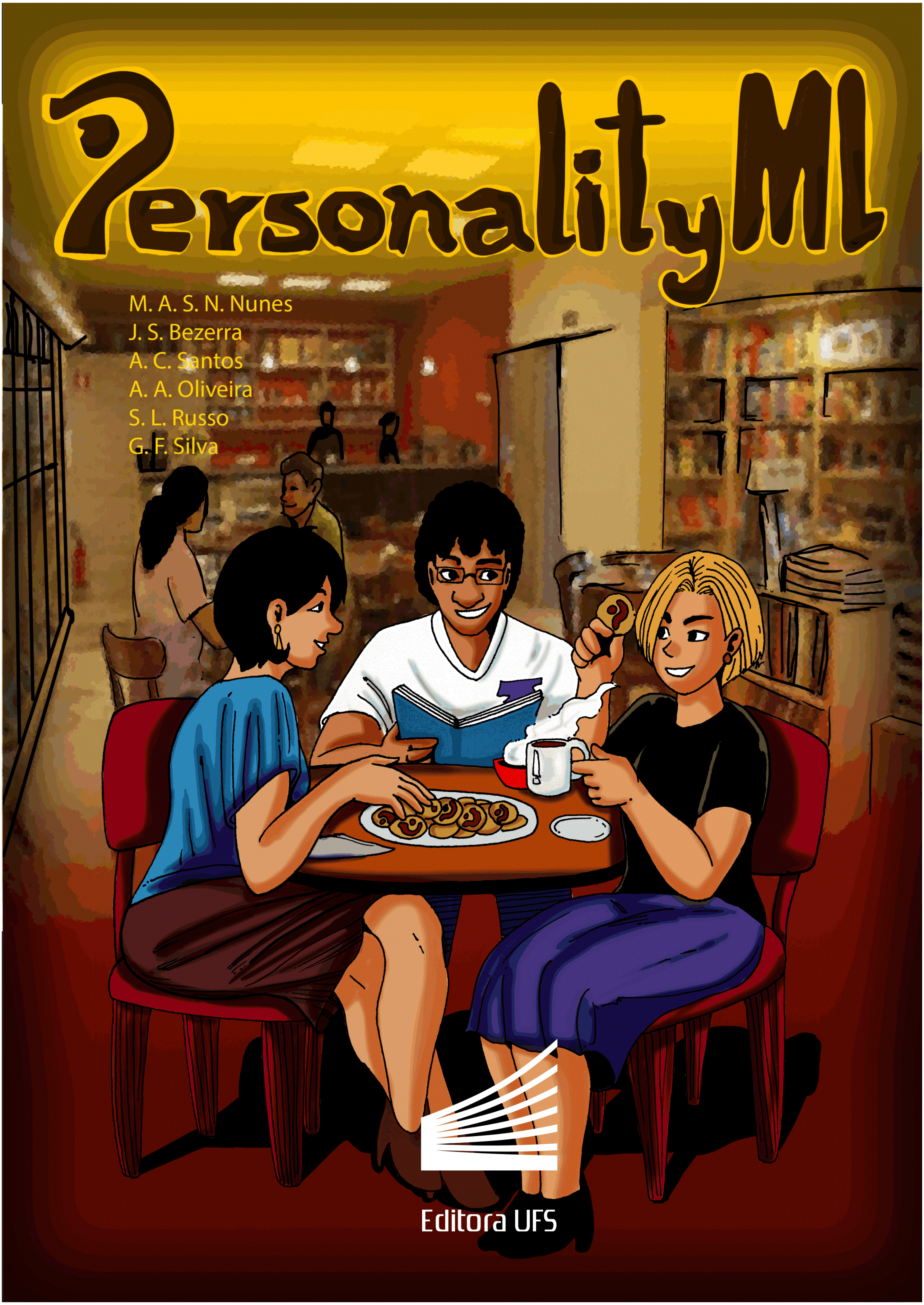

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PersonalityML

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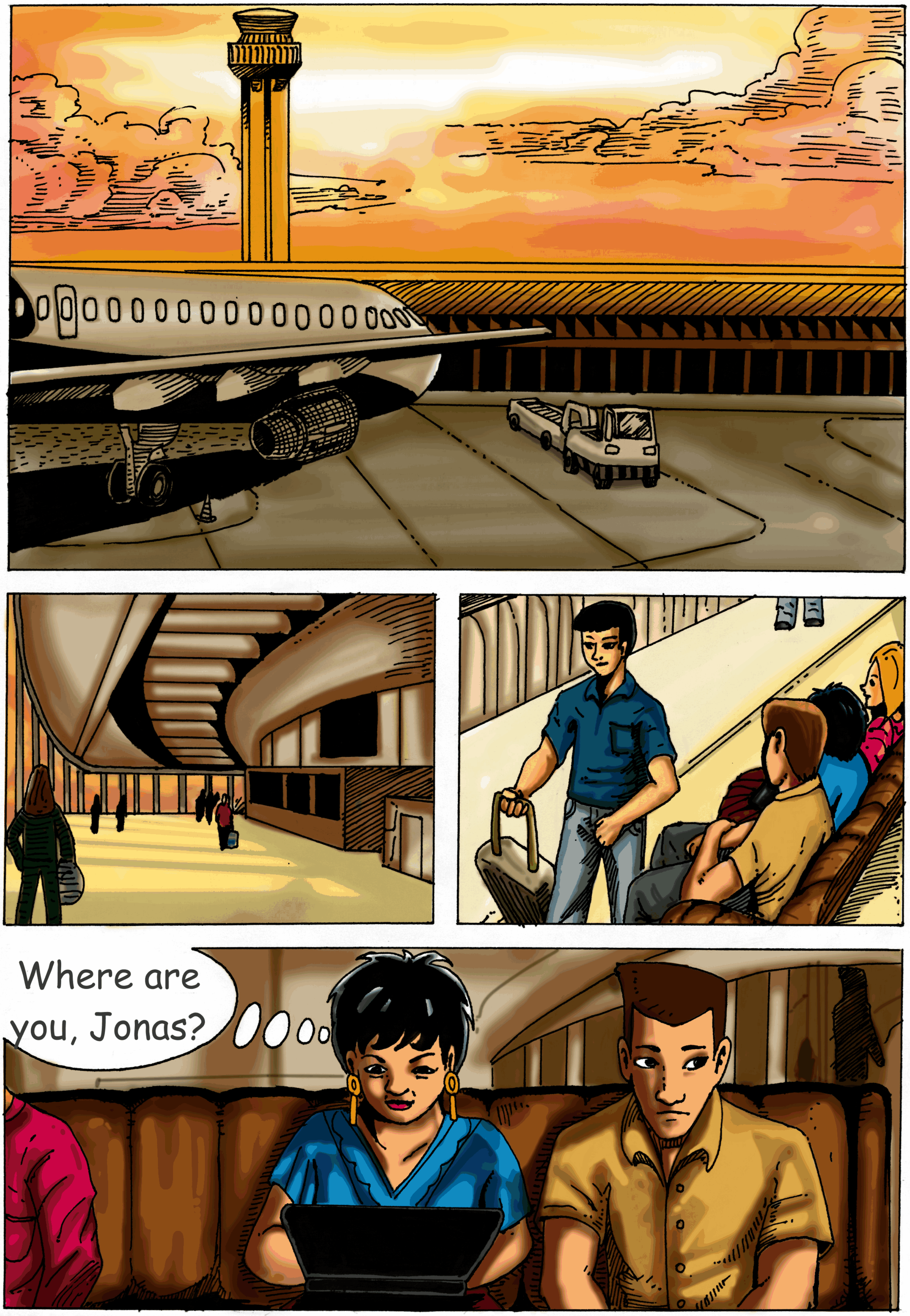
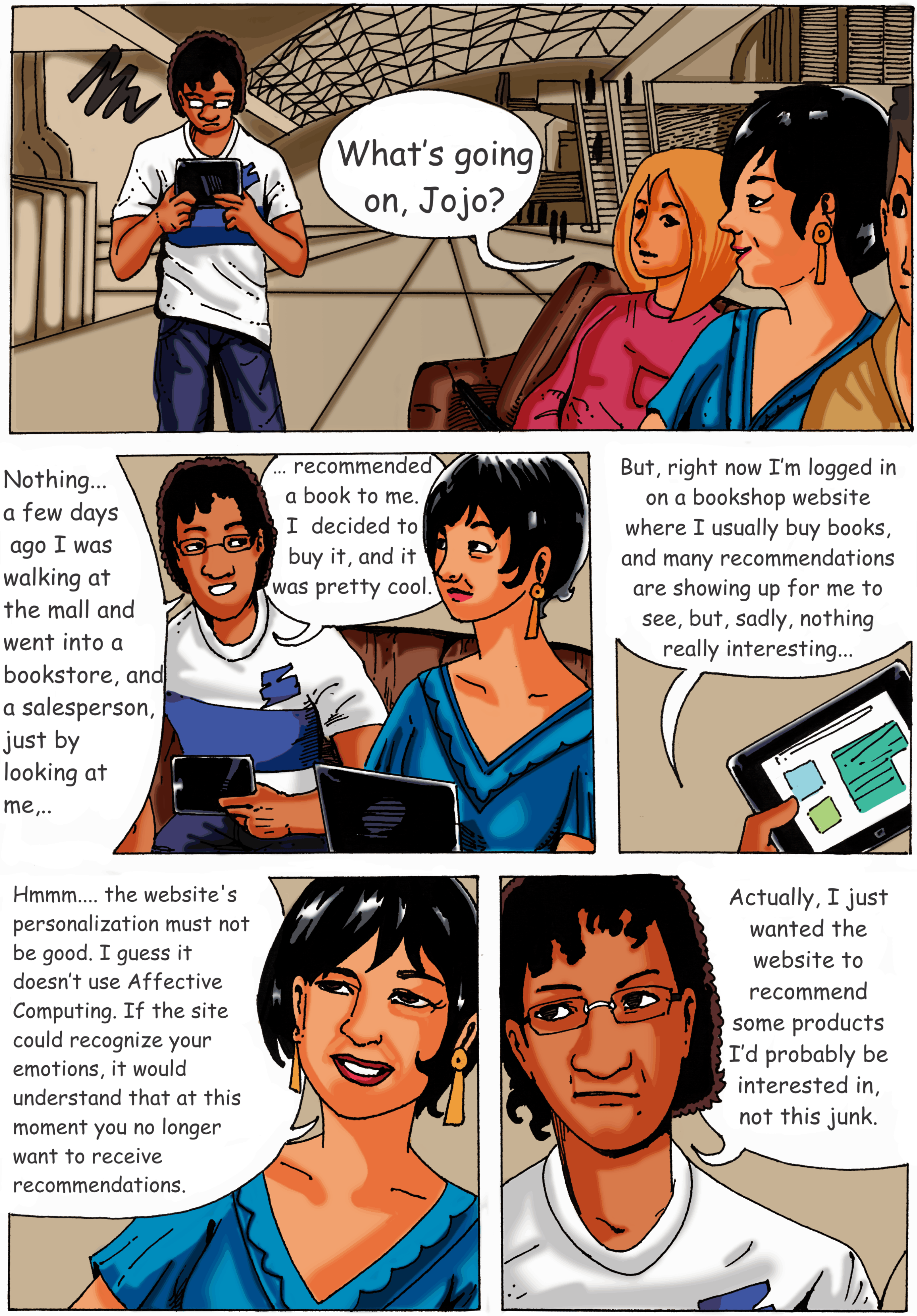
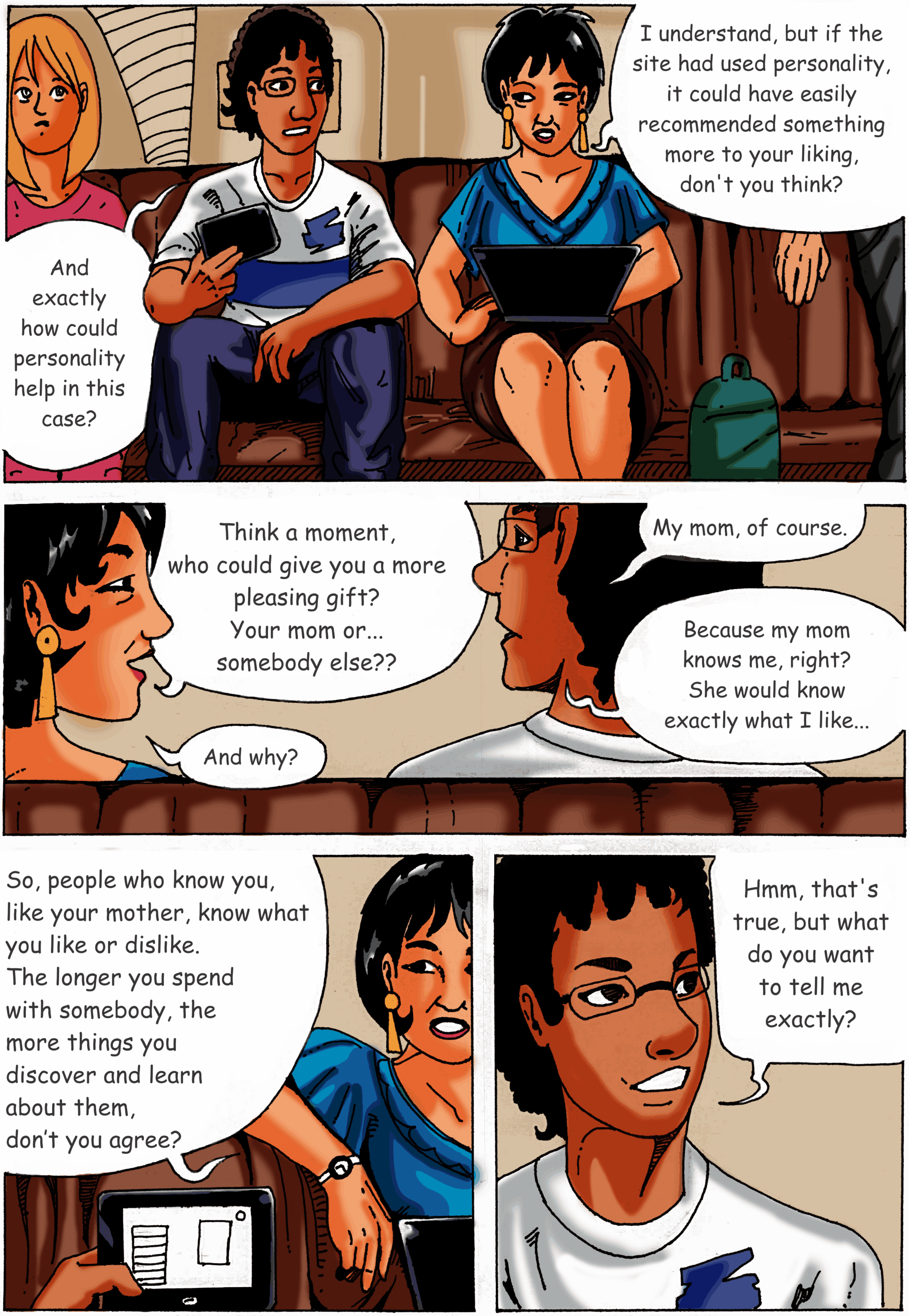
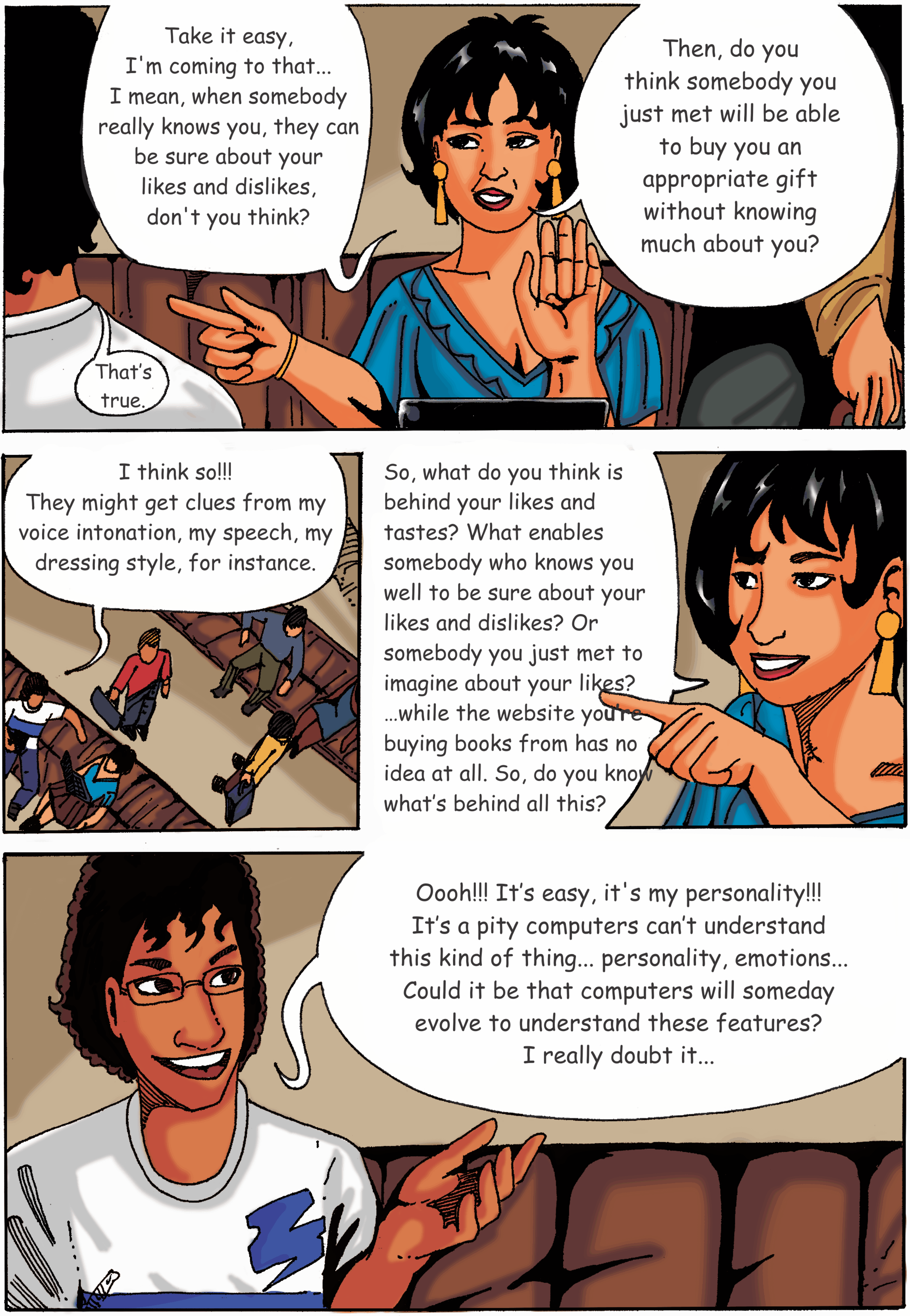
Presentation

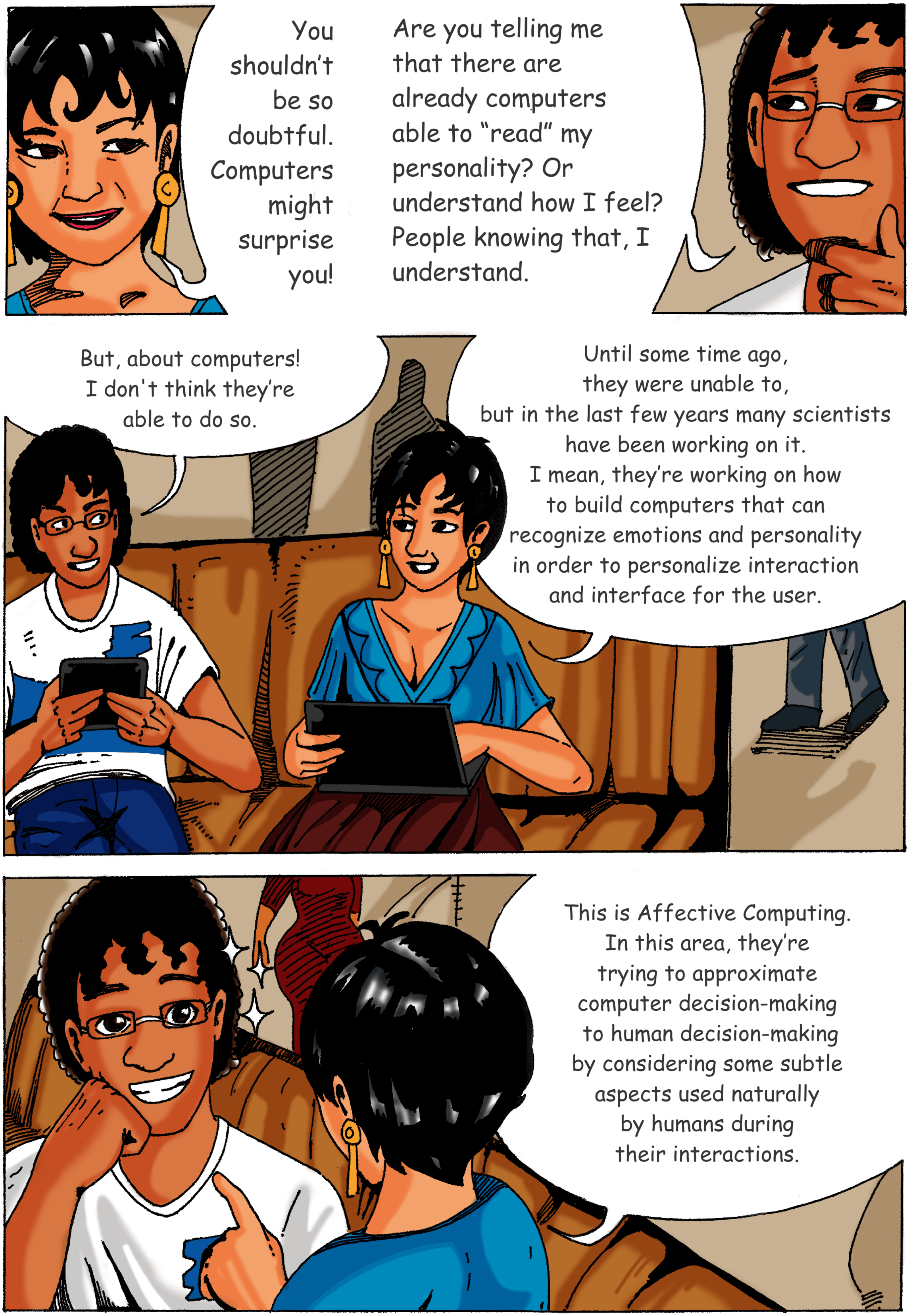
In recent years, many researchers have studied how human psychological aspects may influence the human decision-making process and how these aspects could be used to improve the computer decision-making process. However, the greatest problems faced by these researchers are how to effectively use, model and implement those psychological aspects in computers. The objective of this comic book is to present PersonalityML, a markup language created at the Federal University of Sergipe to standardize the computational representation of personality and enable computers to understand and use it.

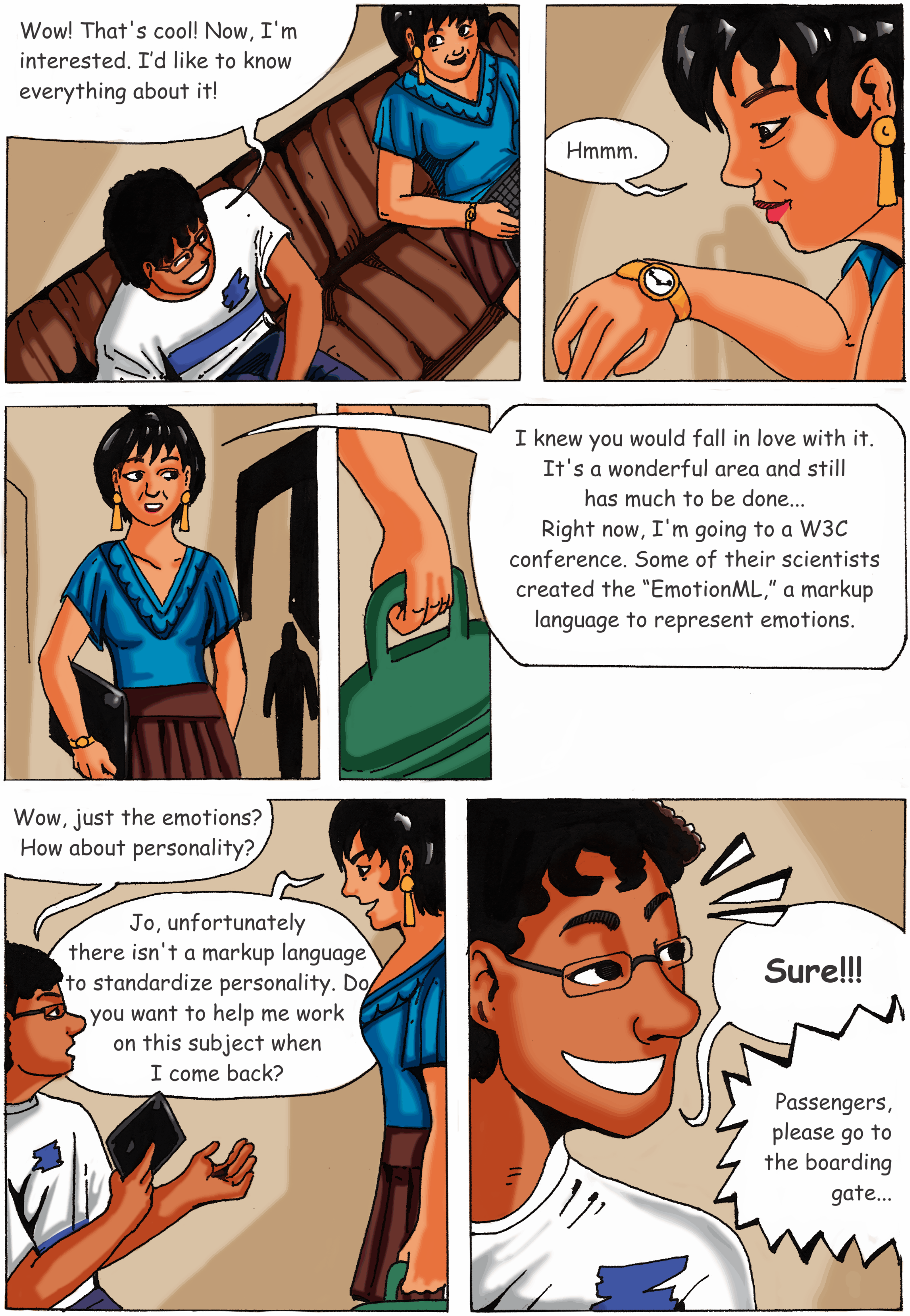

Where are you, Jonas?

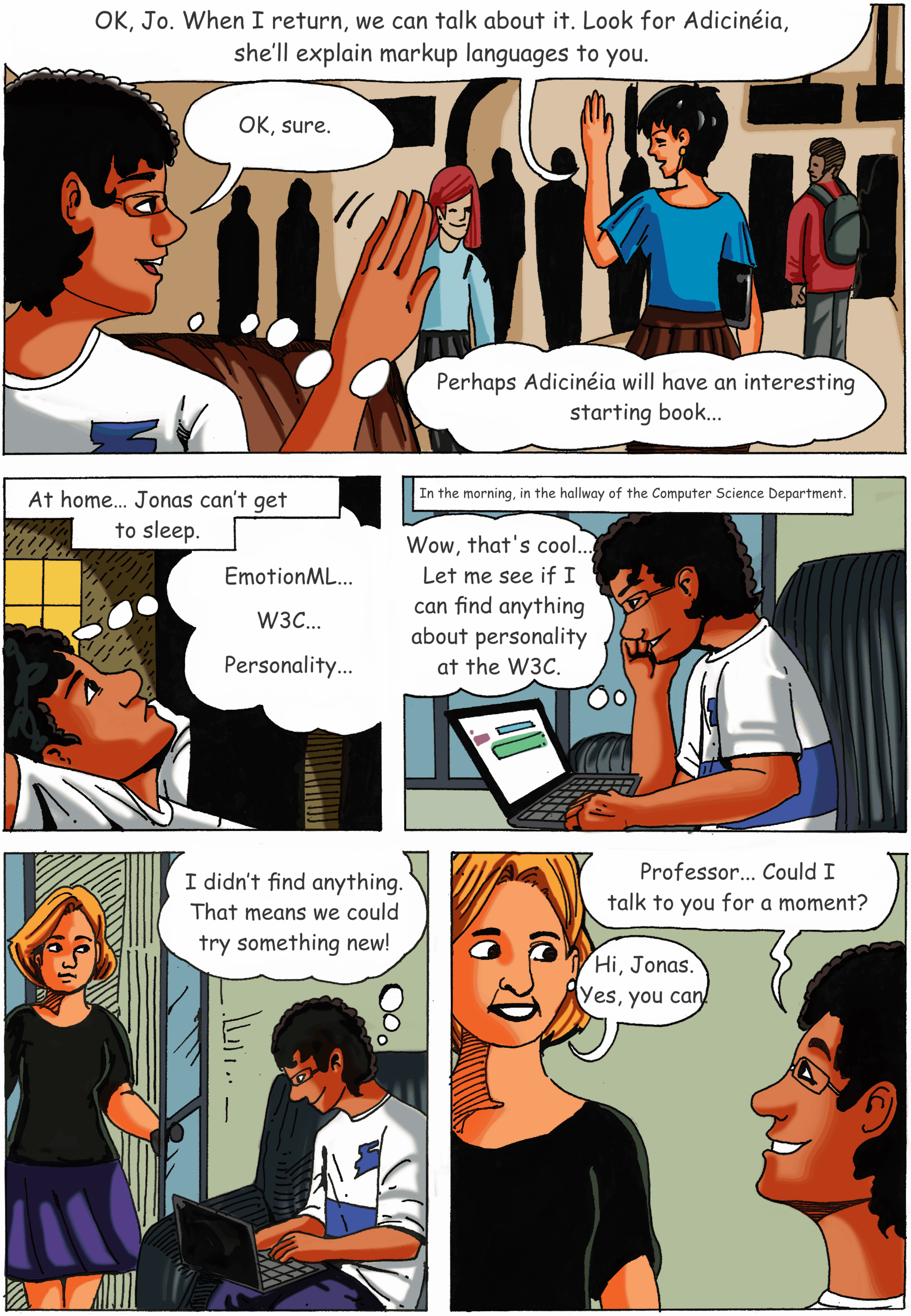

What's going on, Jojo?
Nothing... a few days ago I was walking at the mall and went into a bookstore, and a salesperson, just by looking at me,..
... recommended a book to me. I decided to buy it, and it was pretty cool.
But, right now I'm logged in on a bookshop website where I usually buy books, and many recommendations are showing up for me to see, but, sadly, nothing really interesting...
Hmmm.... the website's personalization must not be good. I guess it doesn't use Affective Computing. If the site could recognize your emotions, it would understand that at this moment you no longer want to receive recommendations.
Actually, I just wanted the website to recommend some products I'd probably be interested in, not this junk.

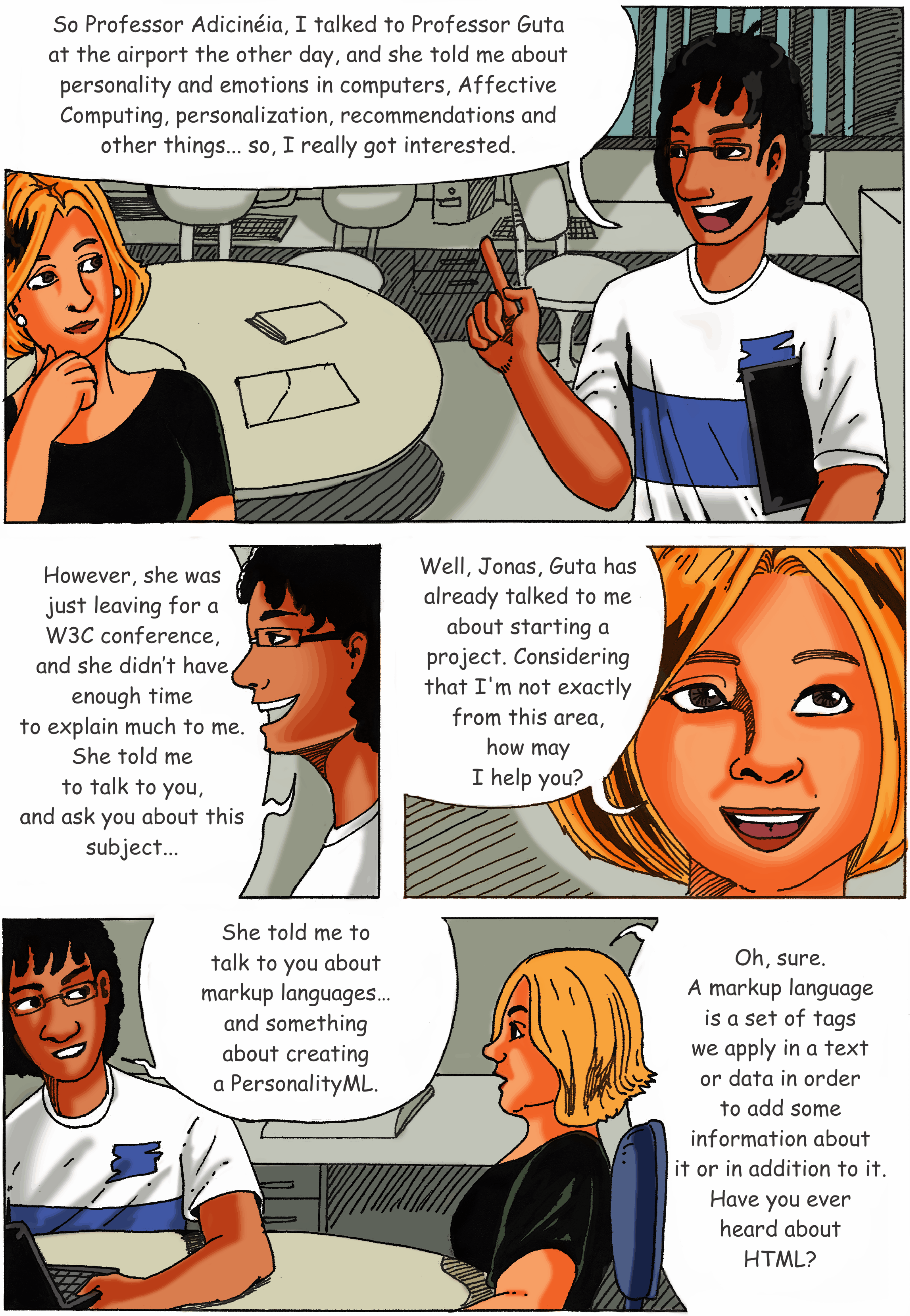

I understand, but if the site had used personality, it could have easily recommended something more to your liking, don't you think?
And exactly how could personality help in this case?
Think a moment, who could give you a more pleasing gift? Your mom or... somebody else??
My mom, of course.
And why?
Because my mom knows me, right? She would know exactly what I like...
So, people who know you, like your mother, know what you like or dislike. The longer you spend with somebody, the more things you discover and learn about them, don't you agree?
Hmm, that's true, but what do you want to tell me exactly?

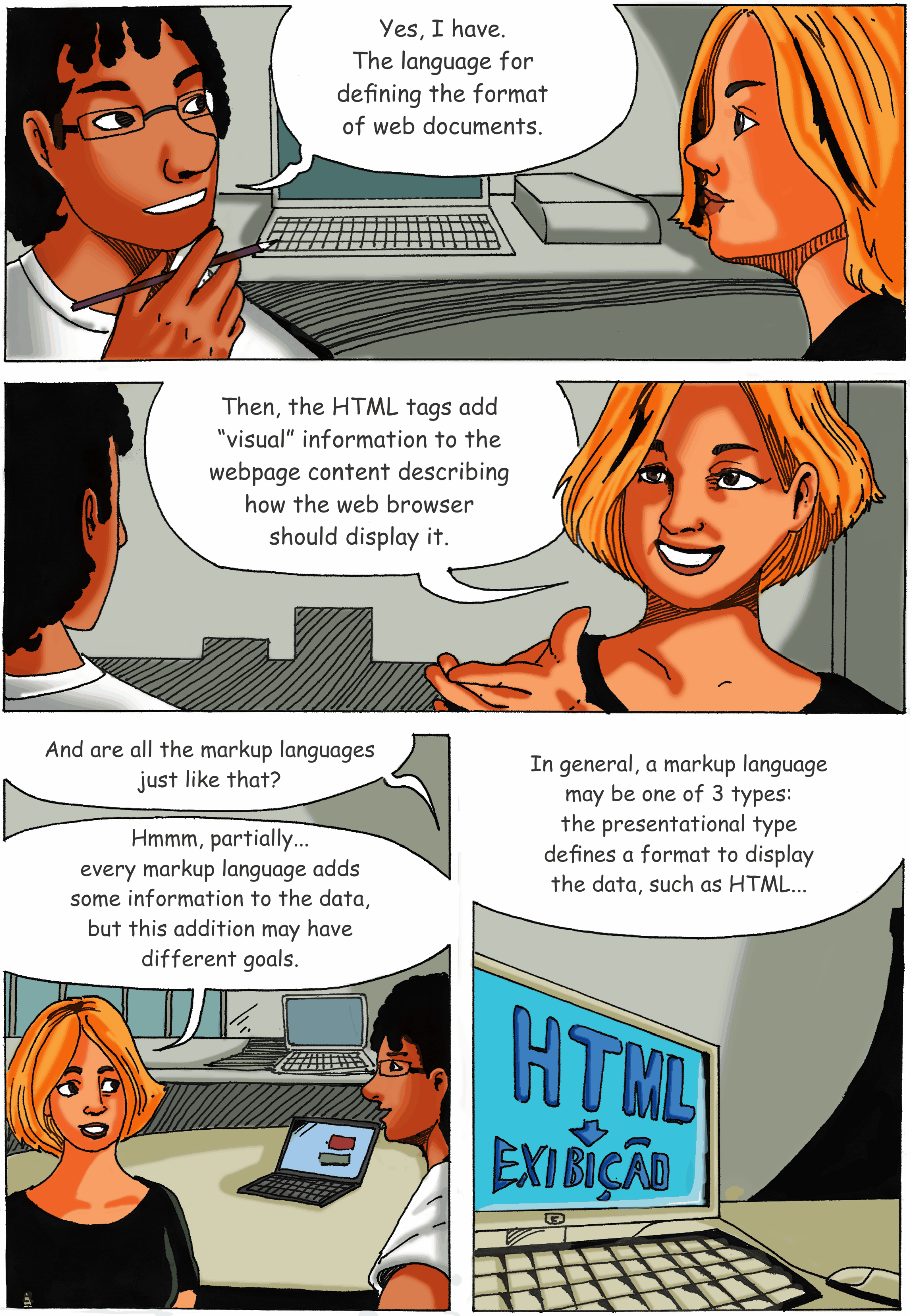

Take it easy, I'm coming to that... I mean, when somebody really knows you, they can be sure about your likes and dislikes, don't you think?
That's true.
Then, do you think somebody you just met will be able to buy you an appropriate gift without knowing much about you?
I think so!!! They might get clues from my voice intonation, my speech, my dressing style, for instance.
So, what do you think is behind your likes and tastes? What enables somebody who knows you well to be sure about your likes and dislikes? Or somebody you just met to imagine about your likes? ...while the website you're buying books from has no idea at all. So, do you know what's behind all this?
Oooh!!! It's easy, it's my personality!!! It's a pity computers can't understand this kind of thing... personality, emotions... Could it be that computers will someday evolve to understand these features? I really doubt it...

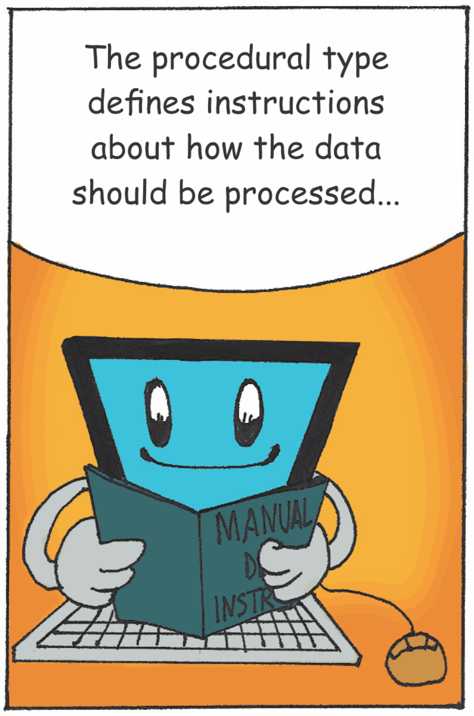

You shouldn't be so doubtful. Computers might surprise you!
Are you telling me that there are already computers able to "read" my personality? Or understand how I feel? People knowing that, I understand.
But, about computers! I don't think they're able to do so.
Until some time ago, they were unable to, but in the last few years many scientists have been working on it. I mean, they're working on how to build computers that can recognize emotions and personality in order to personalize interaction and interface for the user.
This is Affective Computing. In this area, they're trying to approximate computer decision-making to human decision-making by considering some subtle aspects used naturally by humans during their interactions.

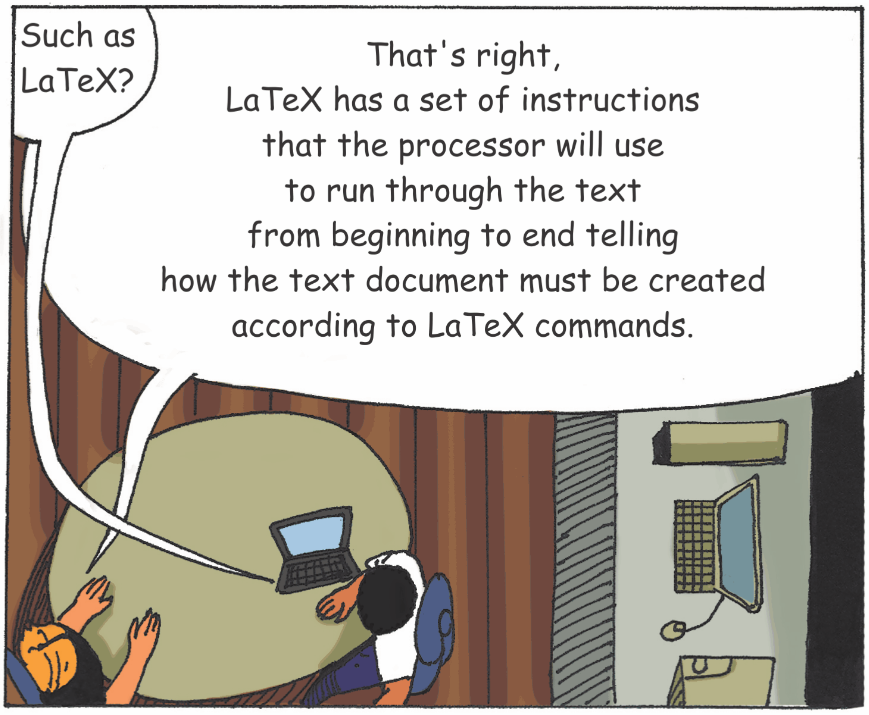

Wow! That's cool! Now, I'm interested. I'd like to know everything about it!
Hmmm.
I knew you would fall in love with it. It's a wonderful area and still has much to be done... Right now, I'm going to a W3C conference. Some of their scientists created the "EmotionML," a markup language to represent emotions.
Wow, just the emotions? How about personality?
Jo, unfortunately there isn't a markup language to standardize personality. Do you want to help me work on this subject when I come back?
Sure!!!
Passengers, please go to the boarding gate...

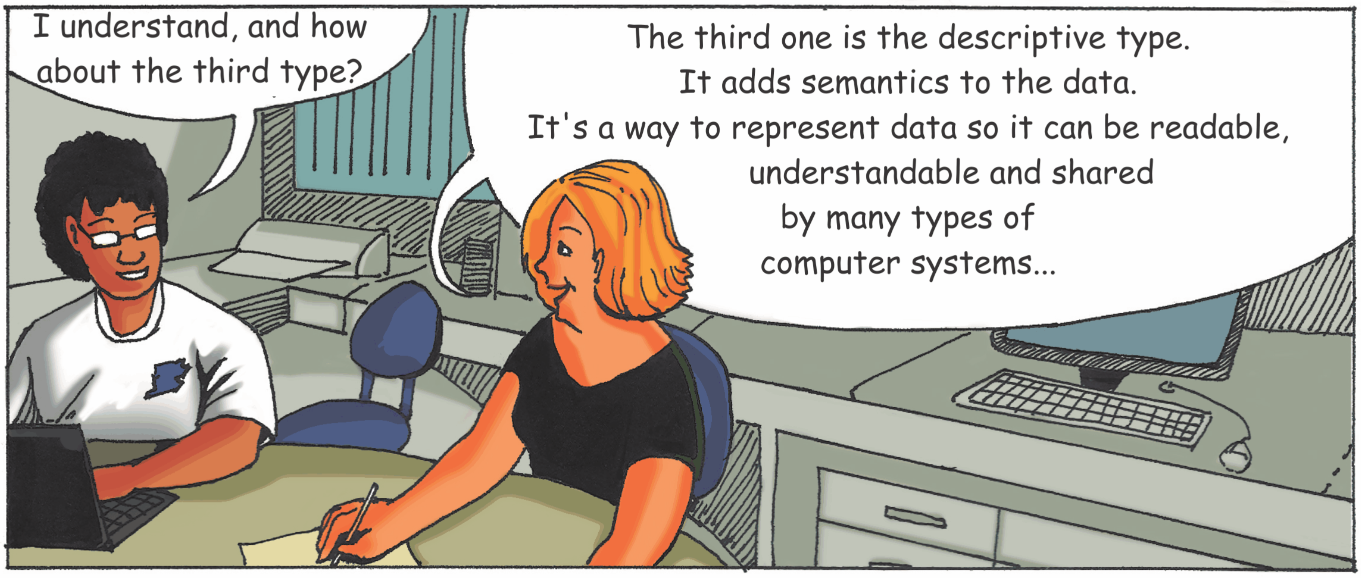

OK, Jo. When I return, we can talk about it. Look for Adicinéia, she'll explain markup languages to you.
OK, sure.
Perhaps Adicinéia will have an interesting starting book...
At home... Jonas can't get to sleep.
EmotionML...
W3C...
Personality...
In the morning, in the hallway of the Computer Science Department.
Wow, that's cool... Let me see if I can find anything about personality at the W3C.
I didn't find anything. That means we could try something new!
Professor... Could I talk to you for a moment?
Hi, Jonas. Yes, you can.

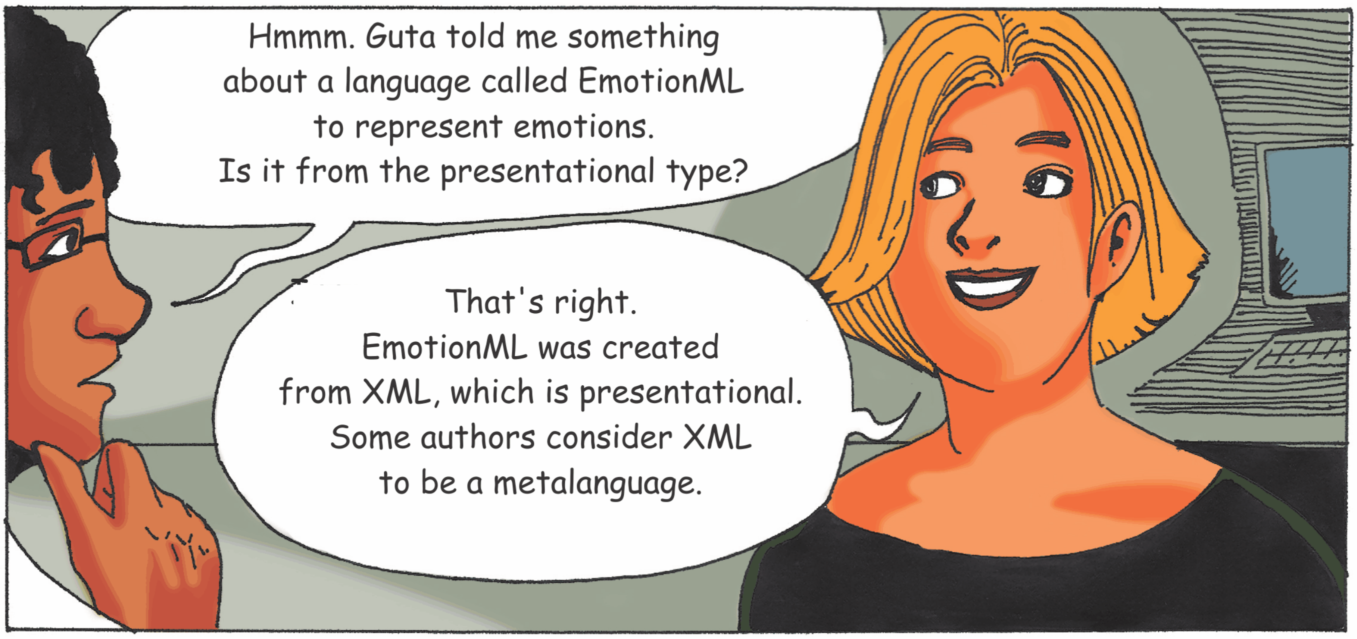

So Professor Adicinéia, I talked to Professor Guta at the airport the other day, and she told me about personality and emotions in computers, Affective Computing, personalization, recommendations and other things... so, I really got interested.
However, she was just leaving for a W3C conference, and she didn't have enough time to explain much to me. She told me to talk to you, and ask you about this subject...
Well, Jonas, Guta has already talked to me about starting a project. Considering that I'm not exactly from this area, how may I help you?
She told me to talk to you about markup languages... and something about creating a PersonalityML.
Oh, sure. A markup language is a set of tags we apply in a text or data in order to add some information about it or in addition to it. Have you ever heard about HTML?

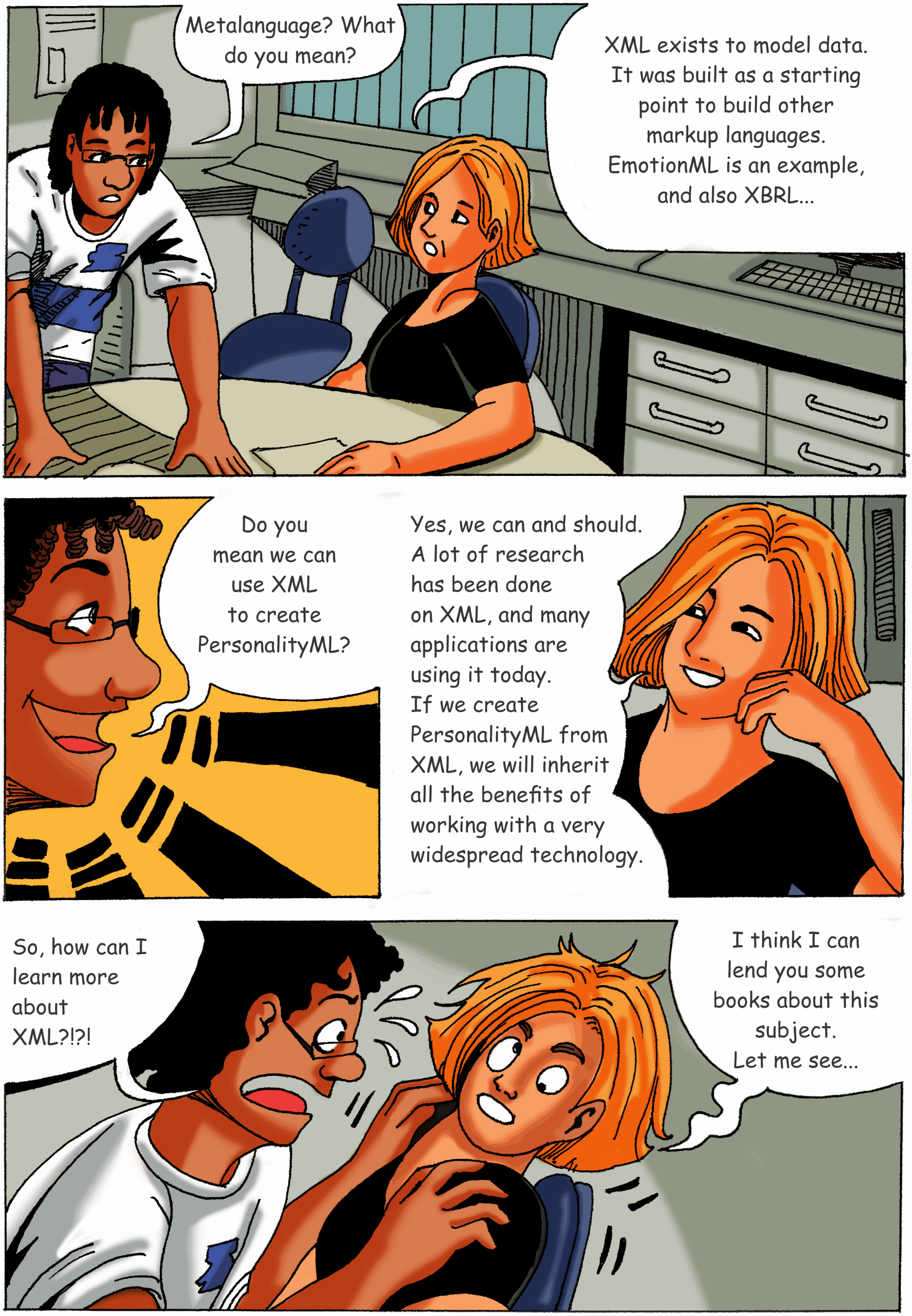

Yes, I have. The language for defining the format of web documents.
Then, the HTML tags add "visual" information to the webpage content describing how the web browser should display it.
And are all the markup languages just like that?
Hmmm, partially... every markup language adds some information to the data, but this addition may have different goals.
In general, a markup language may be one of 3 types: the presentational type defines a format to display the data, such as HTML...
HTML
EXIBIÇÃO

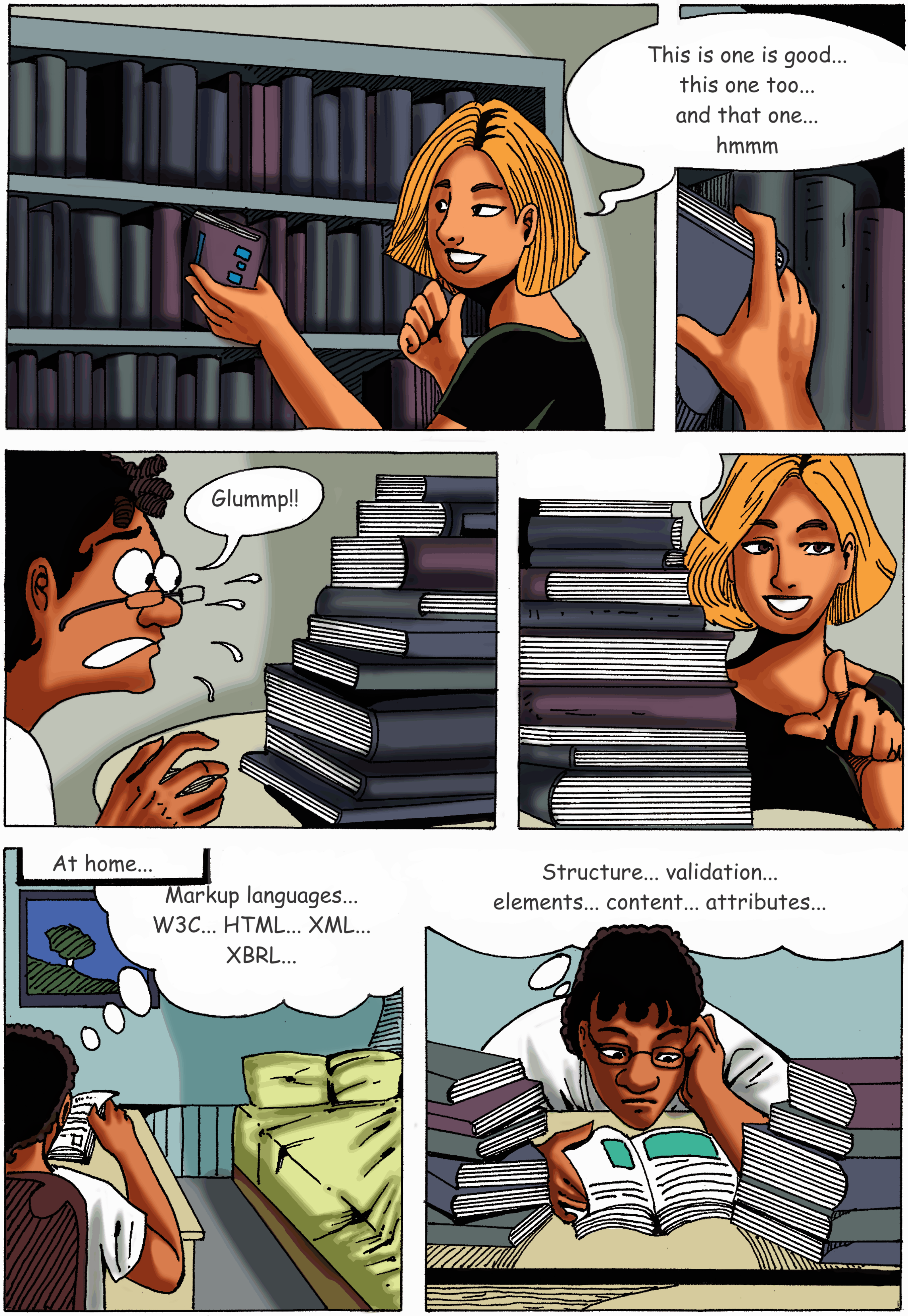

The procedural type defines instructions about how the data should be processed...
MANUAL D INSTR

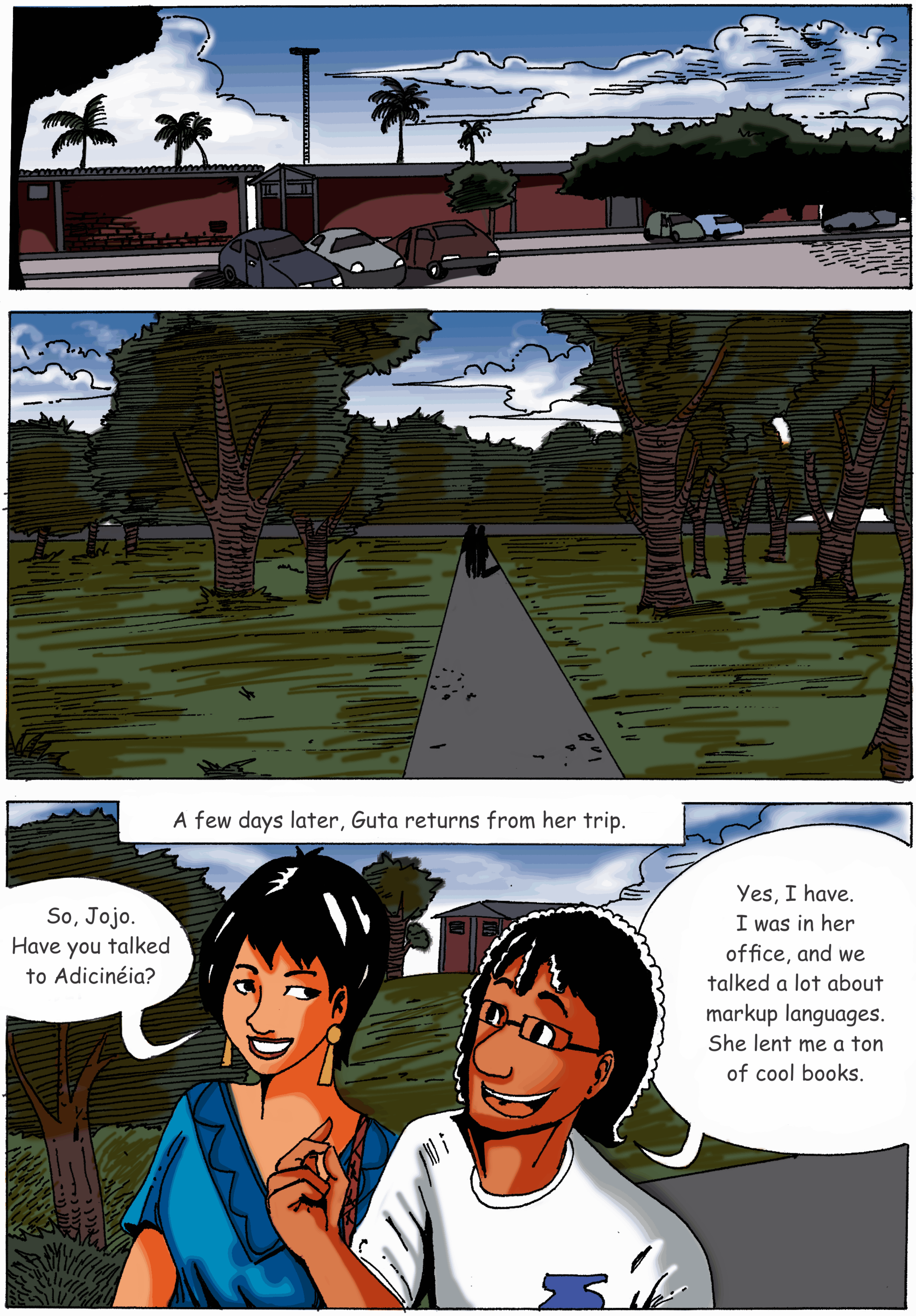

Such as LaTeX?
That's right, LaTeX has a set of instructions that the processor will use to run through the text from beginning to end telling how the text document must be created according to LaTeX commands.

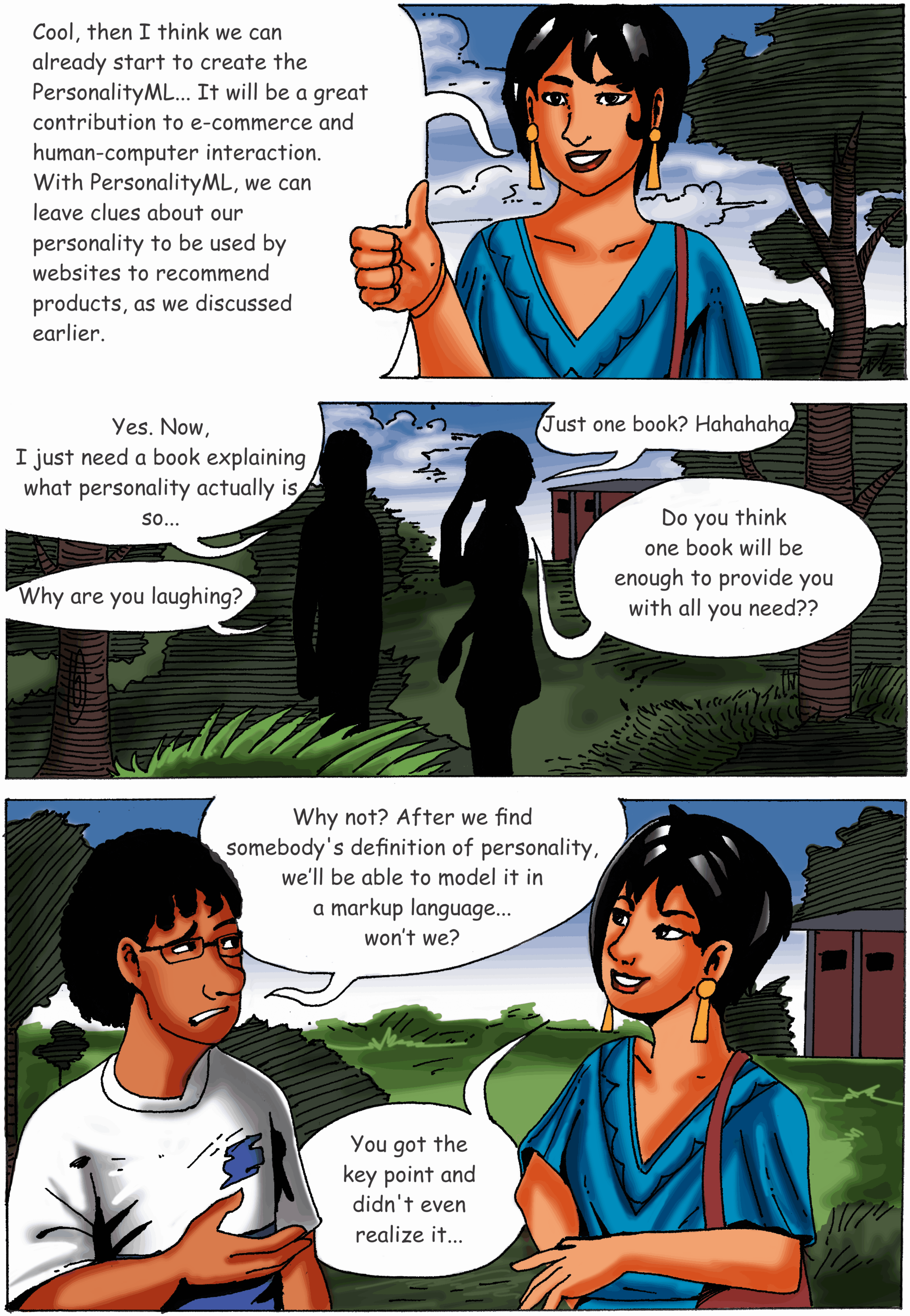

I understand, and how about the third type?
The third one is the descriptive type. It adds semantics to the data. It's a way to represent data so it can be readable, understandable and shared by many types of computer systems...

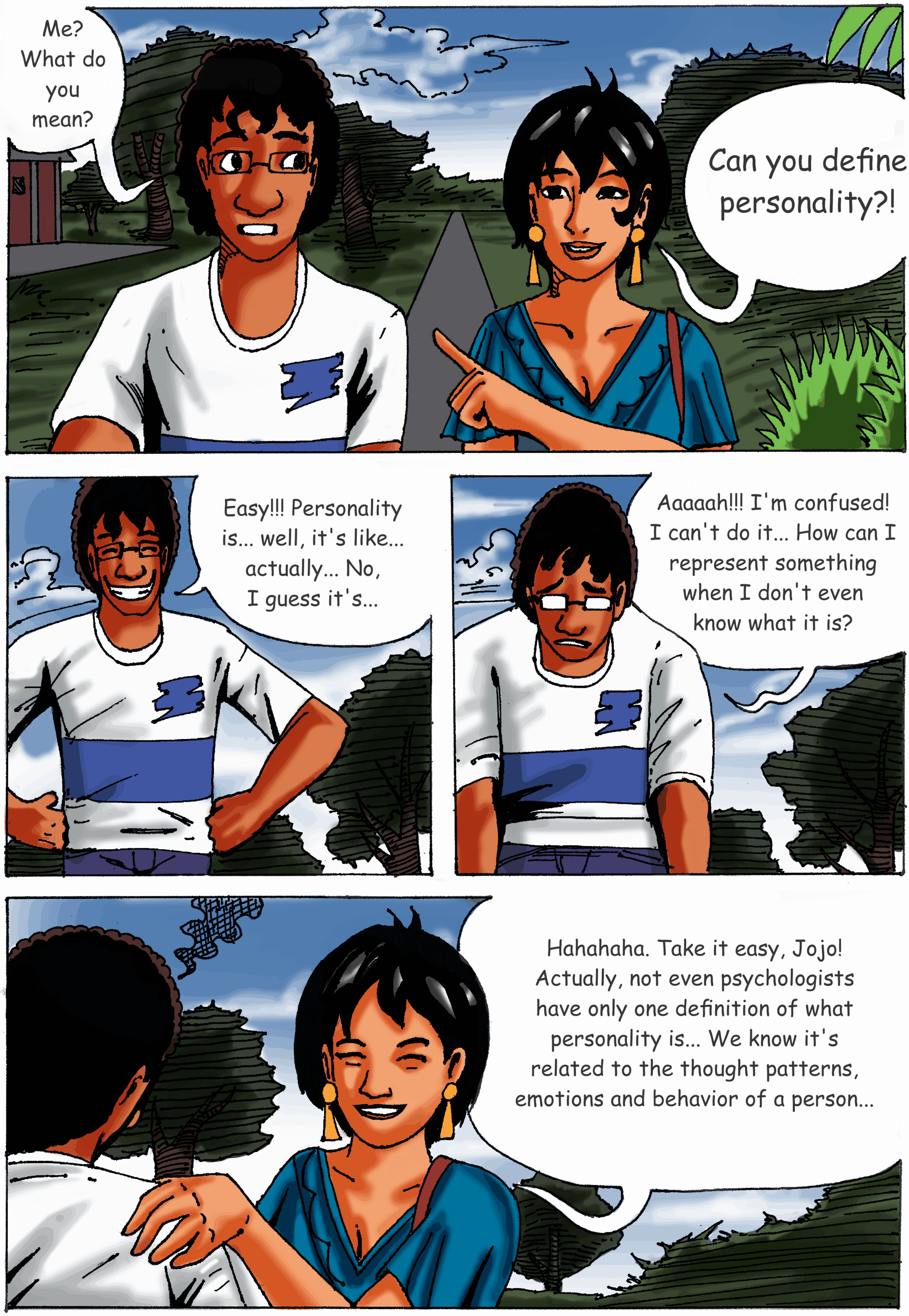

Hmmm. Guta told me something about a language called EmotionML to represent emotions. Is it from the presentational type?
That's right. EmotionML was created from XML, which is presentational. Some authors consider XML to be a metalanguage.

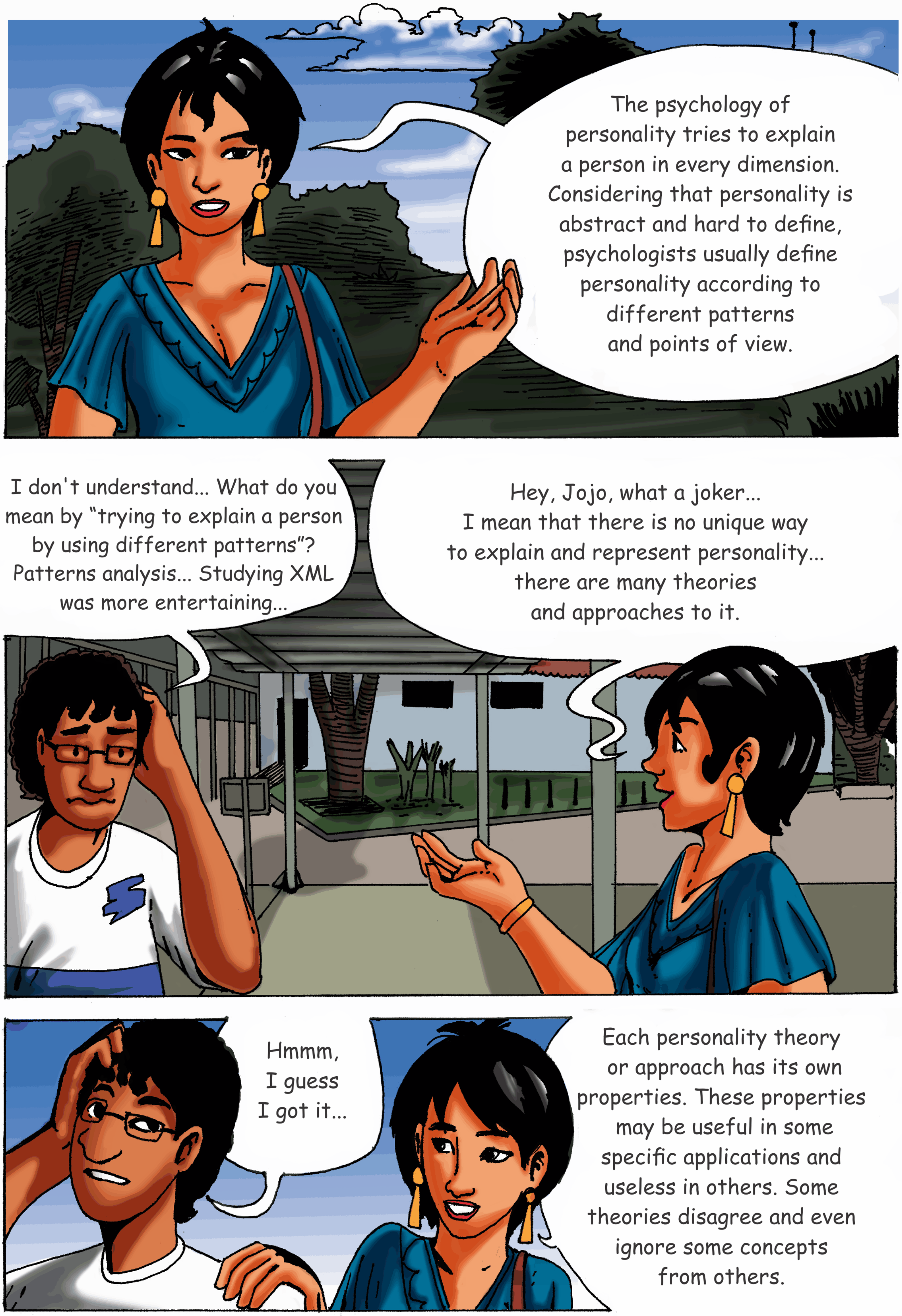

Metalanguage? What do you mean?
XML exists to model data. It was built as a starting point to build other markup languages. EmotionML is an example, and also XBRL...
Do you mean we can use XML to create PersonalityML?
Yes, we can and should. A lot of research has been done on XML, and many applications are using it today. If we create PersonalityML from XML, we will inherit all the benefits of working with a very widespread technology.
So, how can I learn more about XML?!?!
I think I can lend you some books about this subject. Let me see...

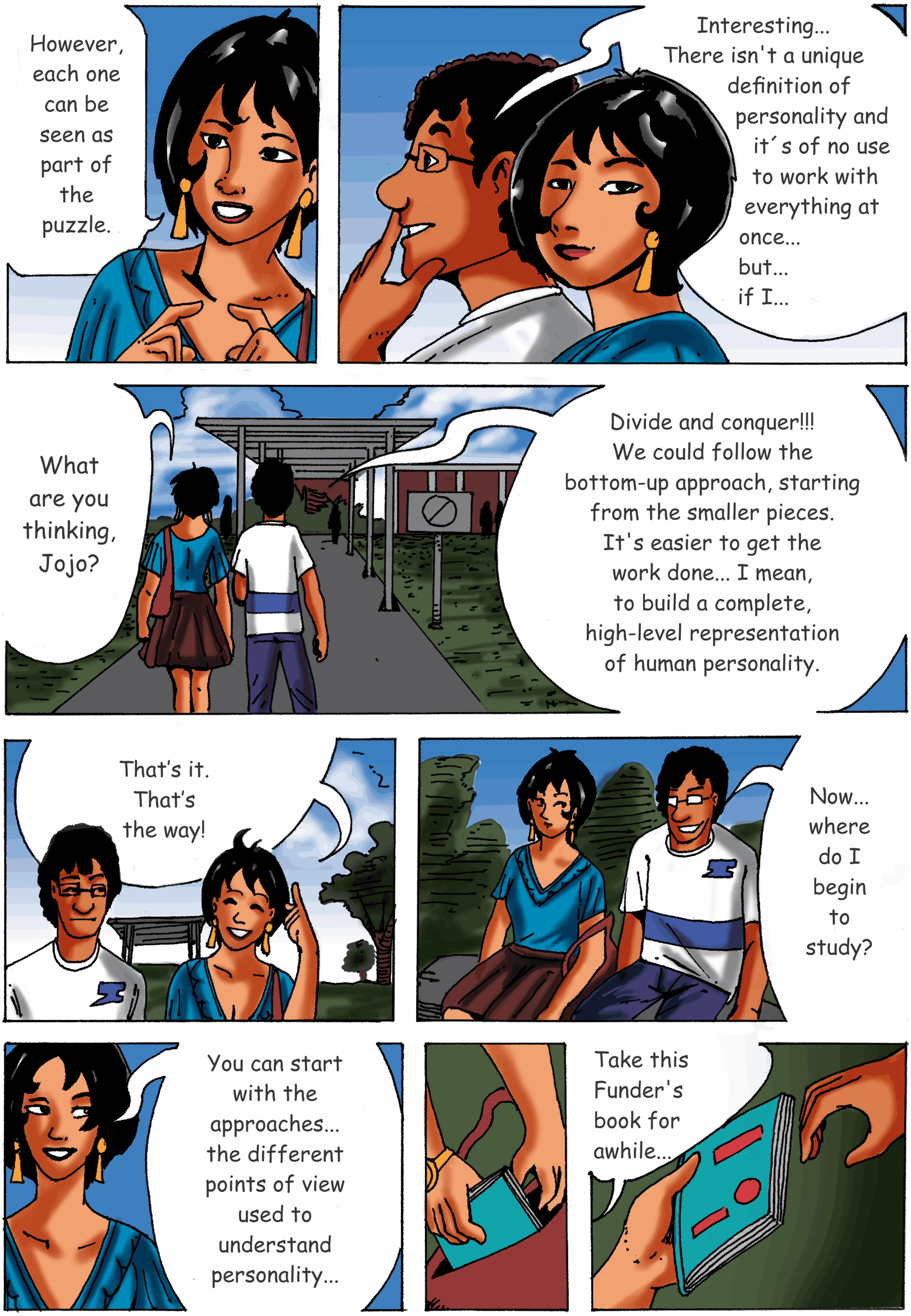

This is one is good...
this one too...
and that one...
hmmm
Glummp!!
At home...
Markup languages...
W3C... HTML... XML...
XBRL...
Structure... validation...
elements... content... attributes...

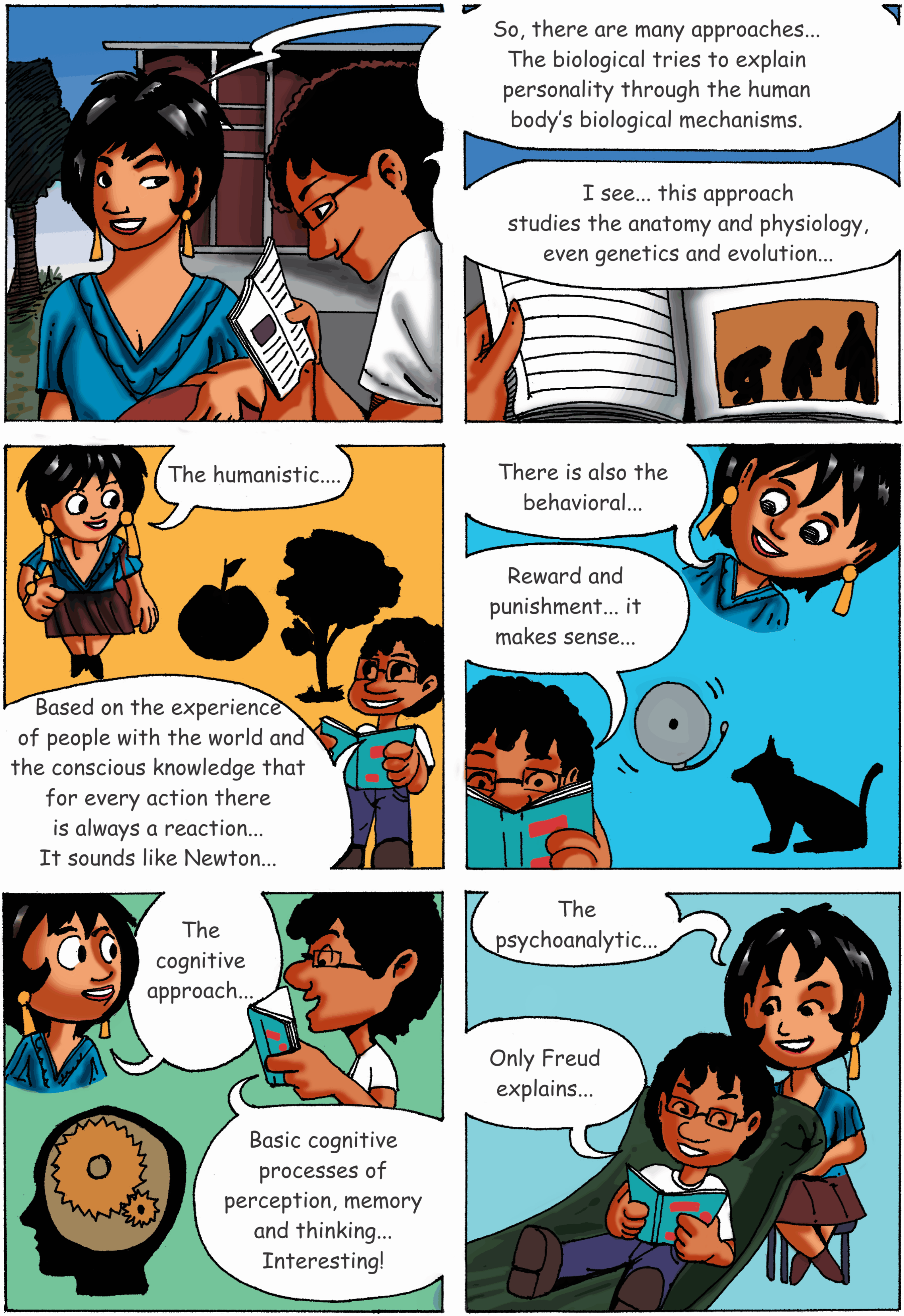

A few days later, Guta returns from her trip.
So, Jojo. Have you talked to Adicinéia?
Yes, I have. I was in her office, and we talked a lot about markup languages. She lent me a ton of cool books.

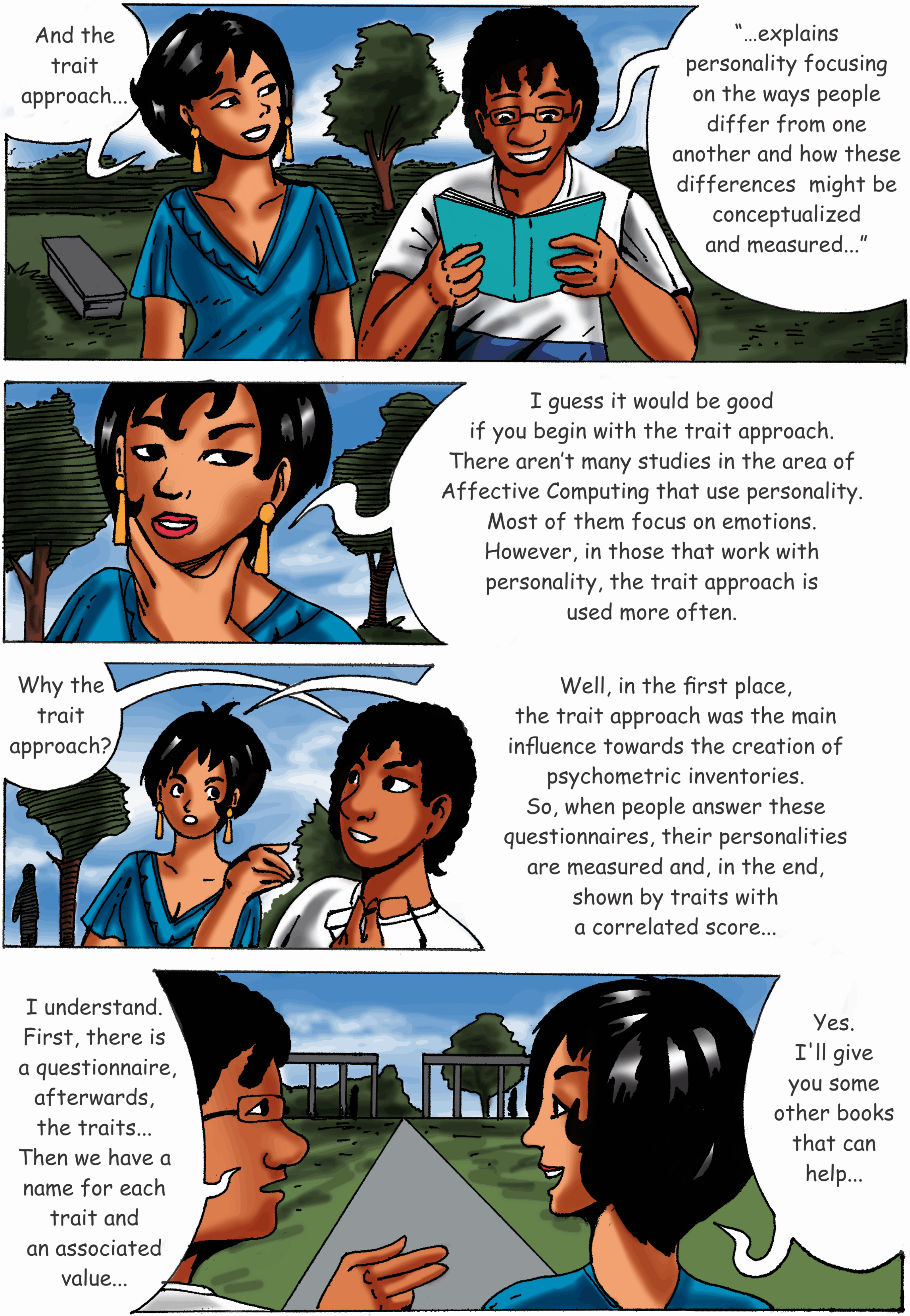

Cool, then I think we can already start to create the PersonalityML... It will be a great contribution to e-commerce and human-computer interaction. With PersonalityML, we can leave clues about our personality to be used by websites to recommend products, as we discussed earlier.
Yes. Now, I just need a book explaining what personality actually is so...
Just one book? Hahahaha
Why are you laughing?
Do you think one book will be enough to provide you with all you need??
Why not? After we find somebody's definition of personality, we'll be able to model it in a markup language... won't we?
You got the key point and didn't even realize it...

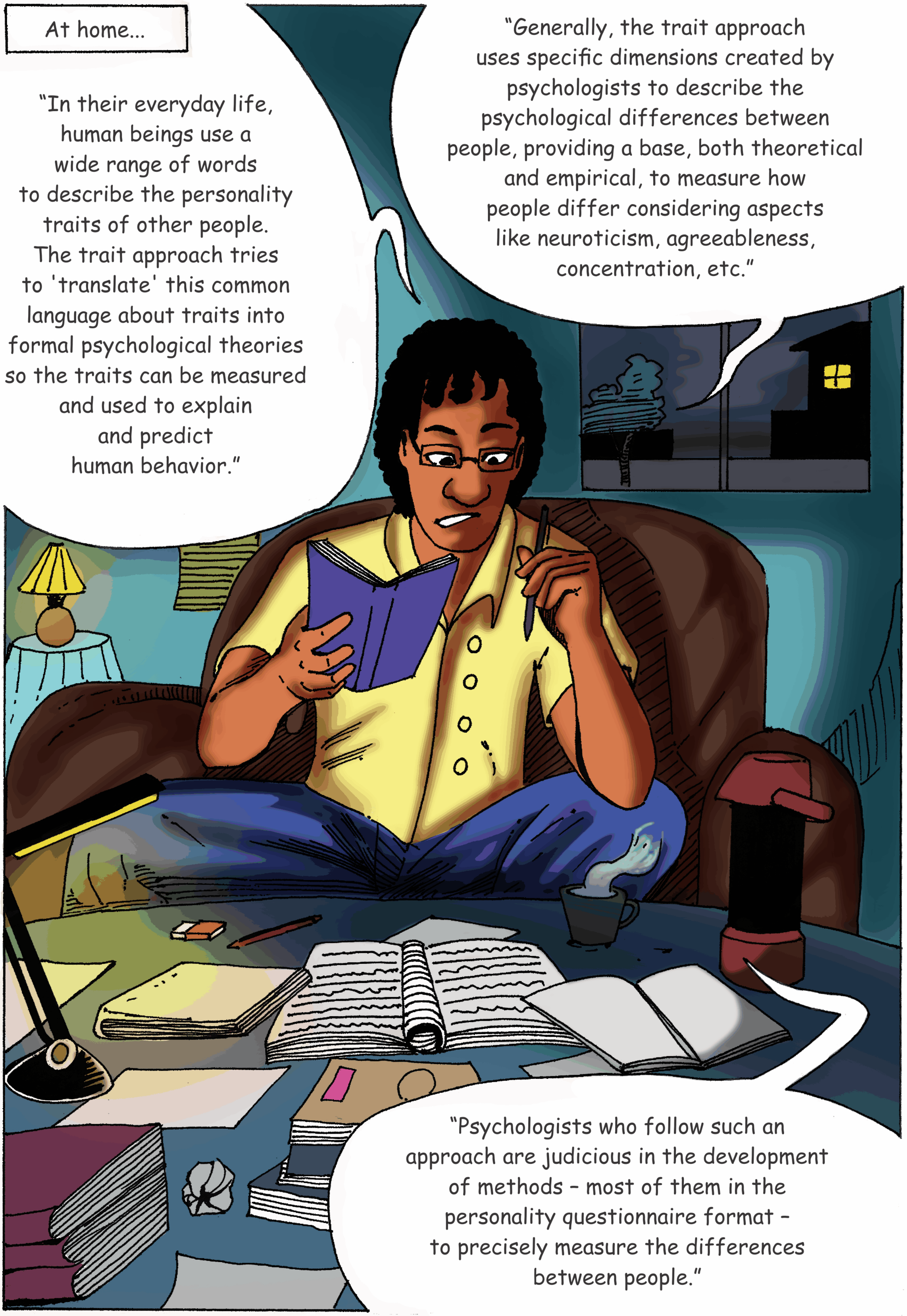

Me? What do you mean?
Can you define personality?!
Easy!!! Personality is... well, it's like... actually... No, I guess it's...
Aaaaah!!! I'm confused! I can't do it... How can I represent something when I don't even know what it is?
Hahahaha. Take it easy, Jojo! Actually, not even psychologists have only one definition of what personality is... We know it's related to the thought patterns, emotions and behavior of a person...

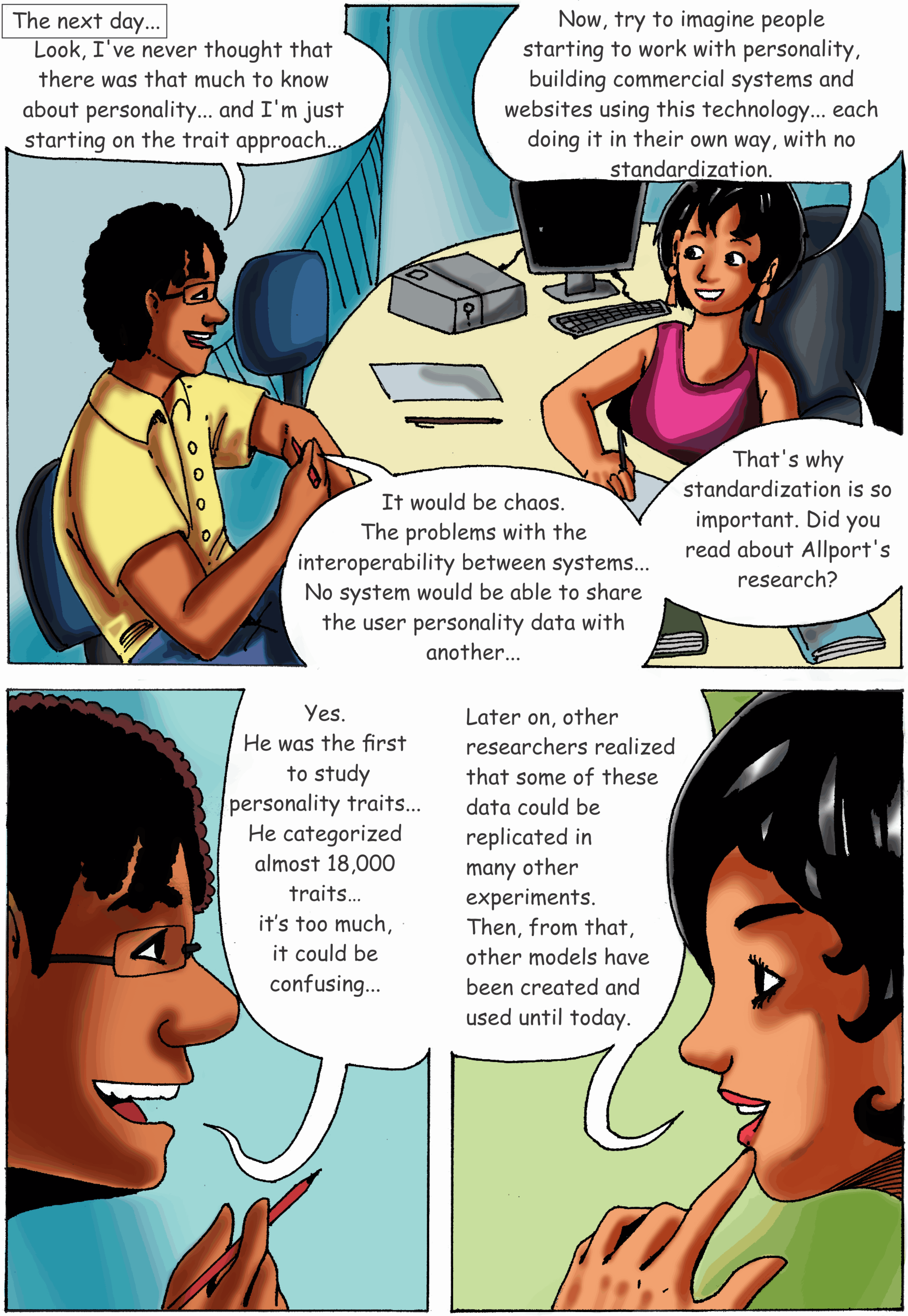

The psychology of personality tries to explain a person in every dimension. Considering that personality is abstract and hard to define, psychologists usually define personality according to different patterns and points of view.
I don't understand... What do you mean by "trying to explain a person by using different patterns"? Patterns analysis... Studying XML was more entertaining...
Hey, Jojo, what a joker... I mean that there is no unique way to explain and represent personality... there are many theories and approaches to it.
Hmmm, I guess I got it...
Each personality theory or approach has its own properties. These properties may be useful in some specific applications and useless in others. Some theories disagree and even ignore some concepts from others.

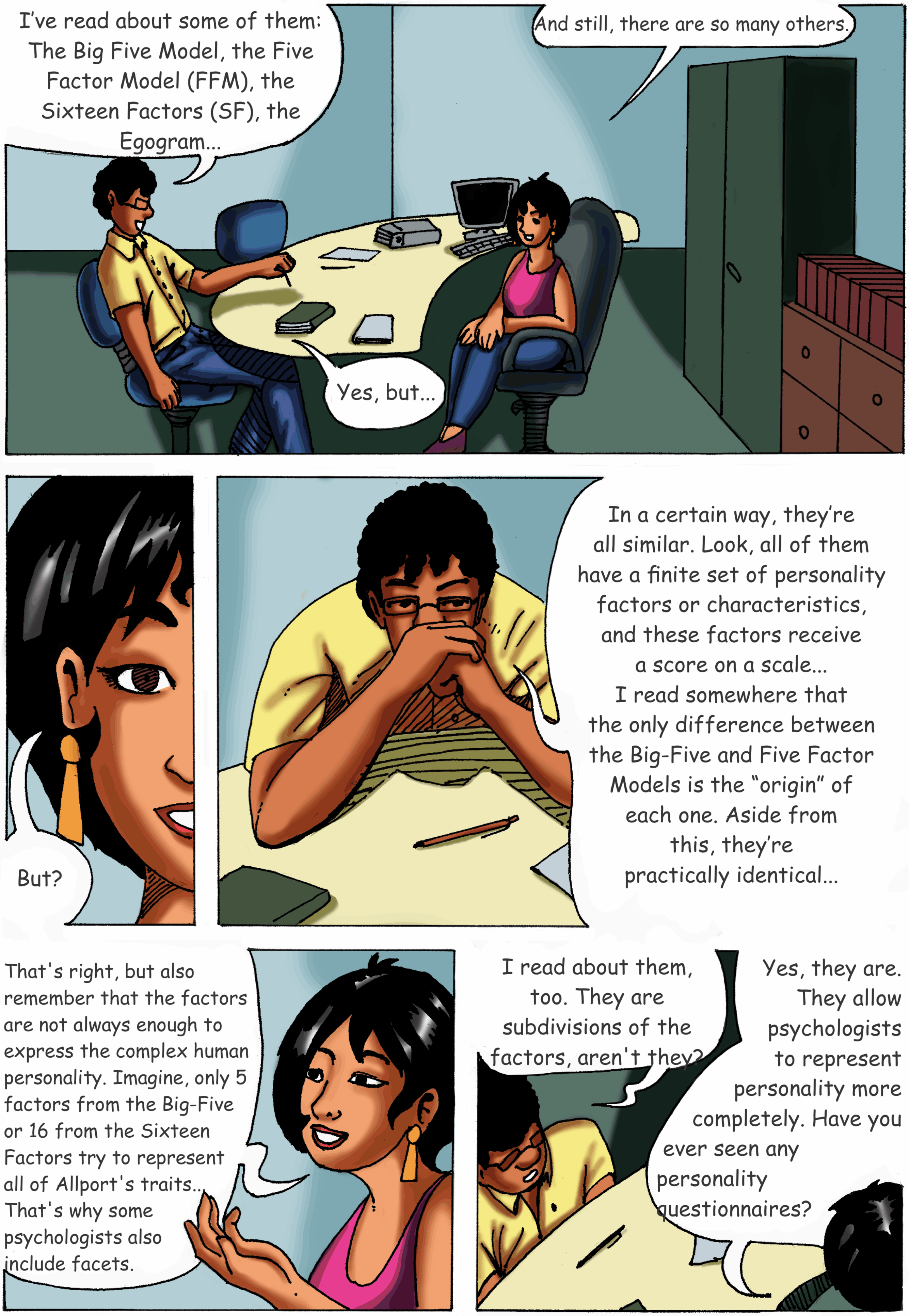

However, each one can be seen as part of the puzzle.
Interesting... There isn't a unique definition of personality and it´s of no use to work with everything at once... but... if I...
What are you thinking, Jojo?
Divide and conquer!!! We could follow the bottom-up approach, starting from the smaller pieces. It's easier to get the work done... I mean, to build a complete, high-level representation of human personality.
That's it. That's the way!
Now... where do I begin to study?
You can start with the approaches... the different points of view used to understand personality...
Take this Funder's book for awhile...

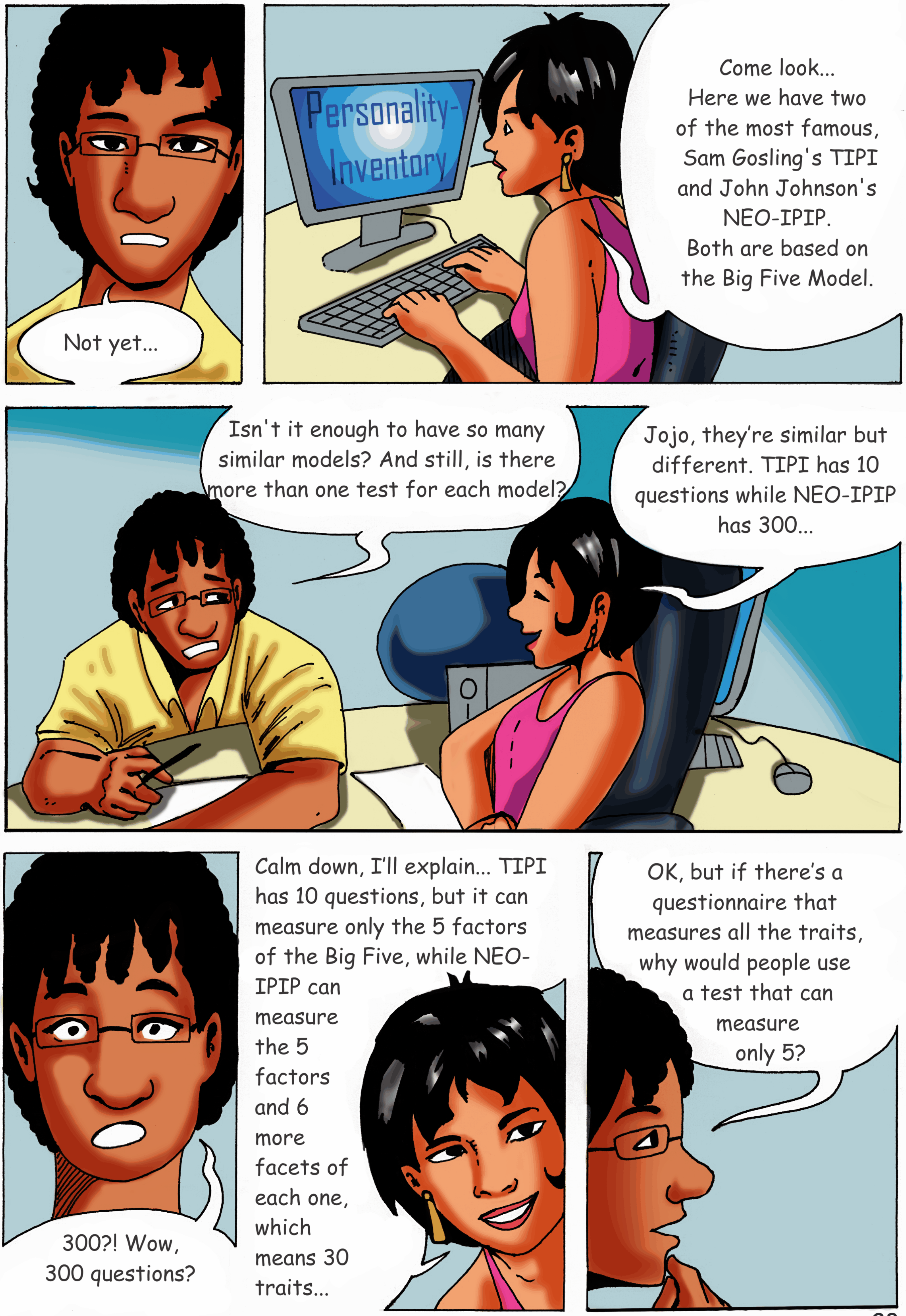

So, there are many approaches... The biological tries to explain personality through the human body's biological mechanisms.
I see... this approach studies the anatomy and physiology, even genetics and evolution...
The humanistic....
Based on the experience of people with the world and the conscious knowledge that for every action there is always a reaction... It sounds like Newton...
There is also the behavioral...
Reward and punishment... it makes sense...
The cognitive approach...
Basic cognitive processes of perception, memory and thinking... Interesting!
The psychoanalytic...
Only Freud explains...

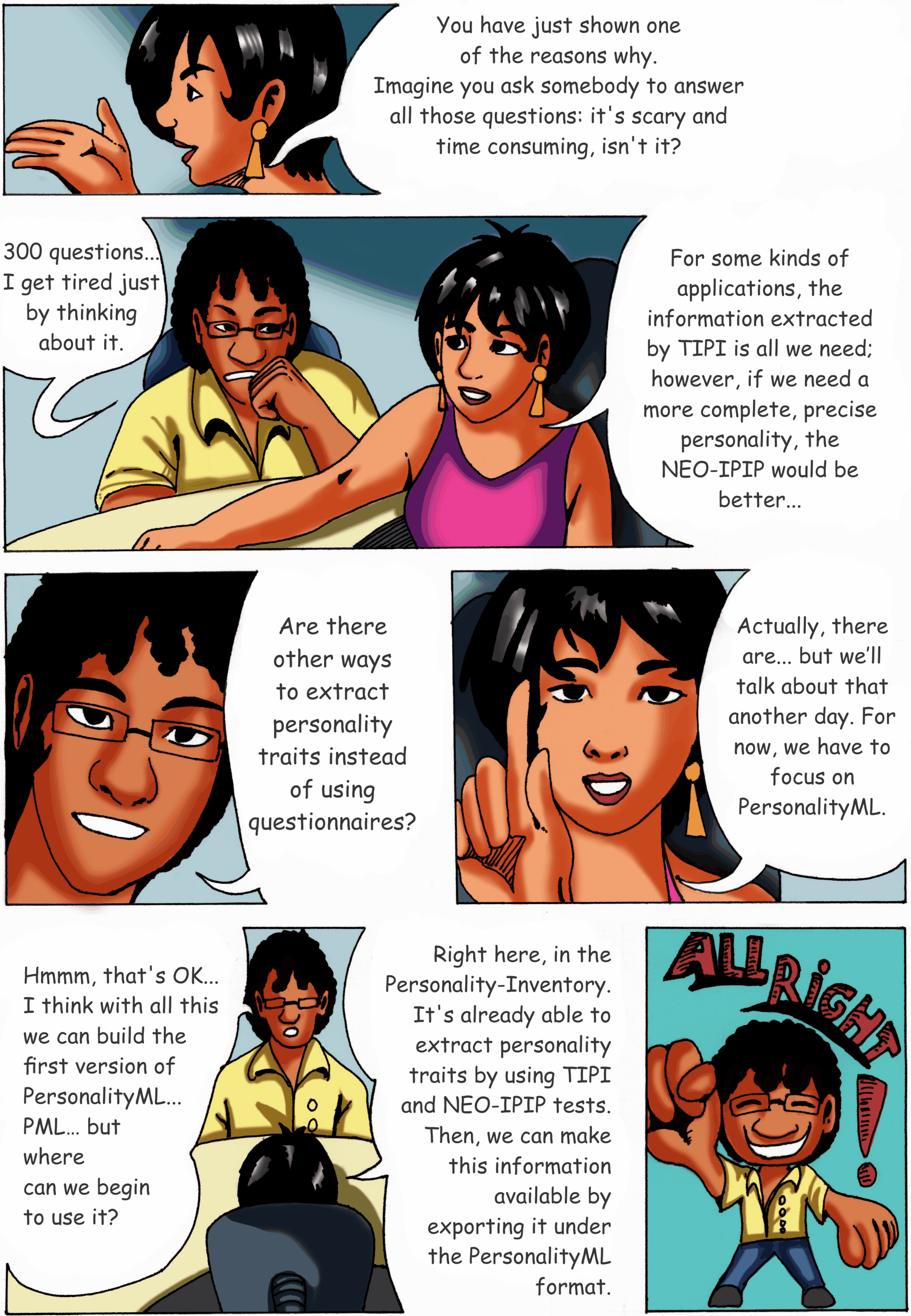

And the trait approach...
"...explains personality focusing on the ways people differ from one another and how these differences might be conceptualized and measured..."
I guess it would be good if you begin with the trait approach. There aren't many studies in the area of Affective Computing that use personality. Most of them focus on emotions. However, in those that work with personality, the trait approach is used more often.
Why the trait approach?
Well, in the first place, the trait approach was the main influence towards the creation of psychometric inventories. So, when people answer these questionnaires, their personalities are measured and, in the end, shown by traits with a correlated score...
I understand. First, there is a questionnaire, afterwards, the traits... Then we have a name for each trait and an associated value...
Yes. I'll give you some other books that can help...

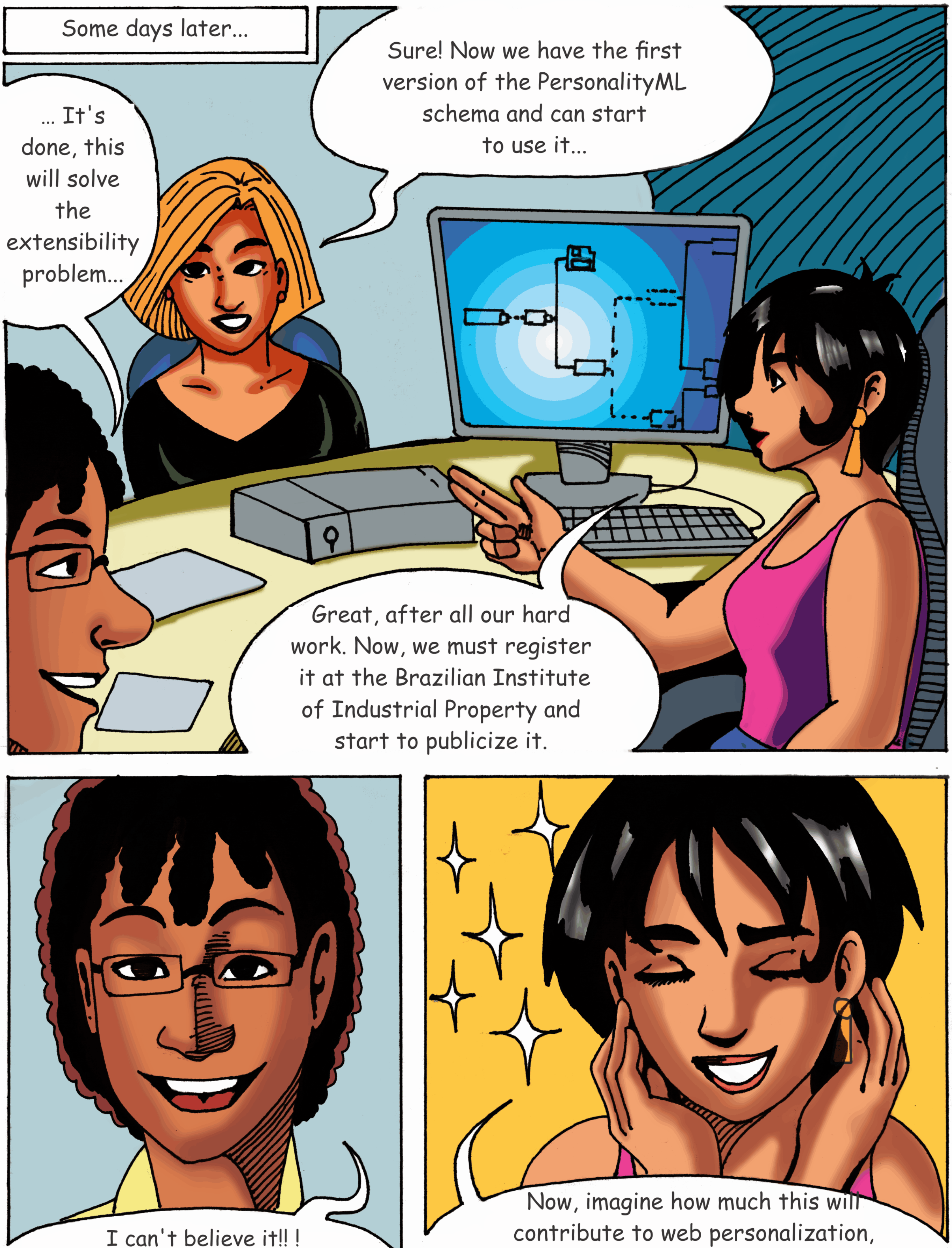

At home...
"In their everyday life, human beings use a wide range of words to describe the personality traits of other people. The trait approach tries to 'translate' this common language about traits into formal psychological theories so the traits can be measured and used to explain and predict human behavior."
"Generally, the trait approach uses specific dimensions created by psychologists to describe the psychological differences between people, providing a base, both theoretical and empirical, to measure how people differ considering aspects like neuroticism, agreeableness, concentration, etc."
"Psychologists who follow such an approach are judicious in the development of methods – most of them in the personality questionnaire format – to precisely measure the differences between people."

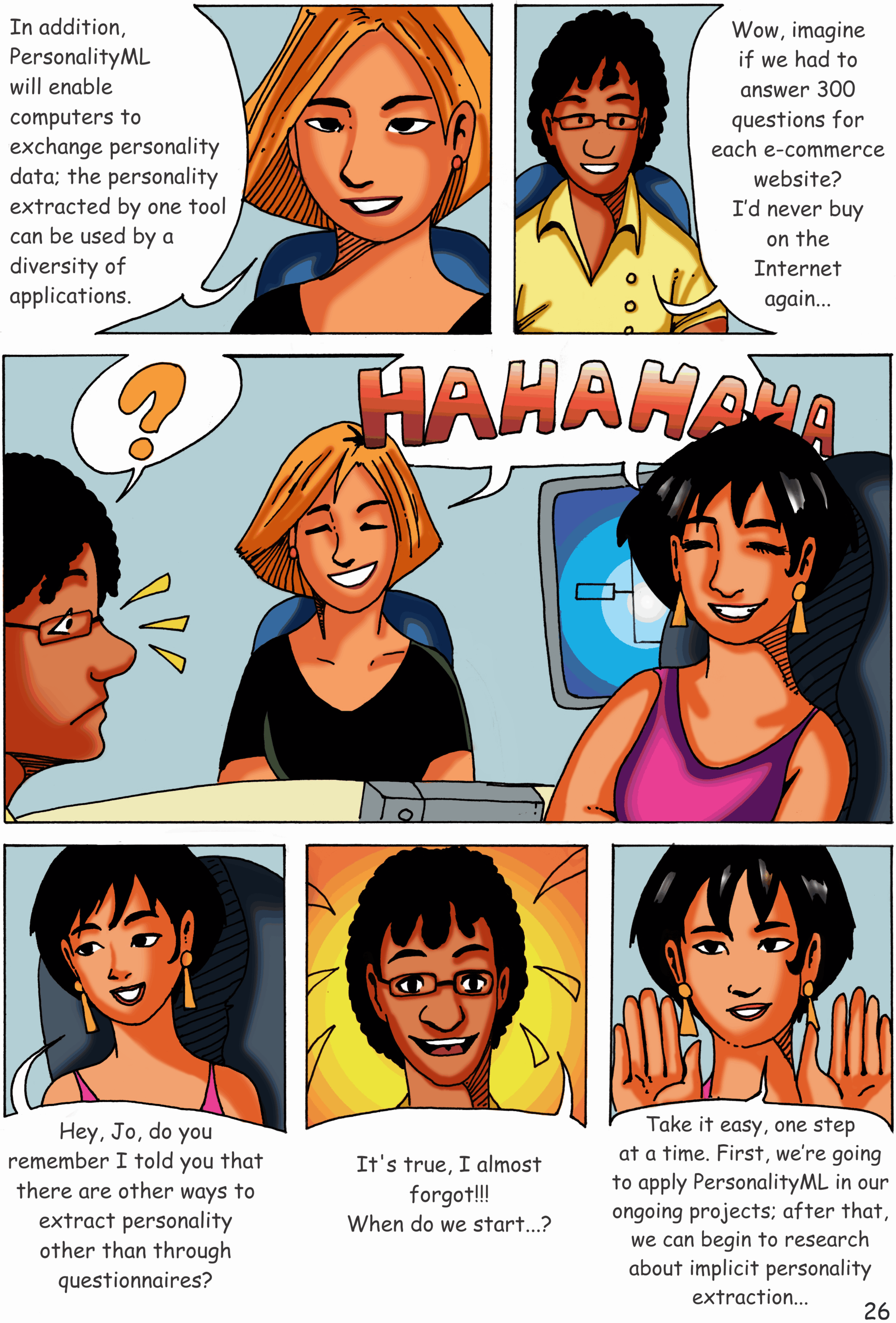

The next day...
Look, I've never thought that there was that much to know about personality... and I'm just starting on the trait approach...
Now, try to imagine people starting to work with personality, building commercial systems and websites using this technology... each doing it in their own way, with no standardization.
It would be chaos. The problems with the interoperability between systems... No system would be able to share the user personality data with another...
That's why standardization is so important. Did you read about Allport's research?
Yes. He was the first to study personality traits... He categorized almost 18,000 traits... it's too much, it could be confusing...
Later on, other researchers realized that some of these data could be replicated in many other experiments. Then, from that, other models have been created and used until today.

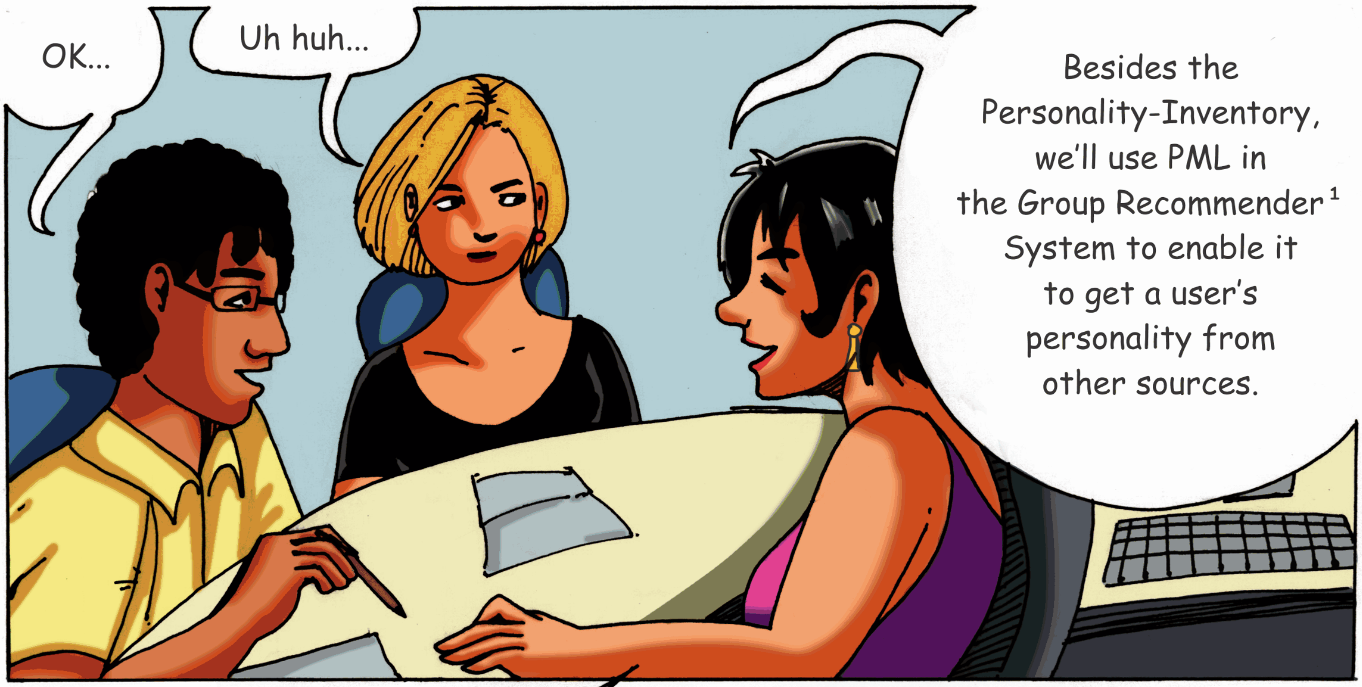

I've read about some of them: The Big Five Model, the Five Factor Model (FFM), the Sixteen Factors (SF), the Egogram...
And still, there are so many others.
Yes, but...
But?
In a certain way, they're all similar. Look, all of them have a finite set of personality factors or characteristics, and these factors receive a score on a scale... I read somewhere that the only difference between the Big-Five and Five Factor Models is the "origin" of each one. Aside from this, they're practically identical...
That's right, but also remember that the factors are not always enough to express the complex human personality. Imagine, only 5 factors from the Big-Five or 16 from the Sixteen Factors try to represent all of Allport's traits... That's why some psychologists also include facets.
I read about them, too. They are subdivisions of the factors, aren't they?
Yes, they are. They allow psychologists to represent personality more completely. Have you ever seen any personality questionnaires?

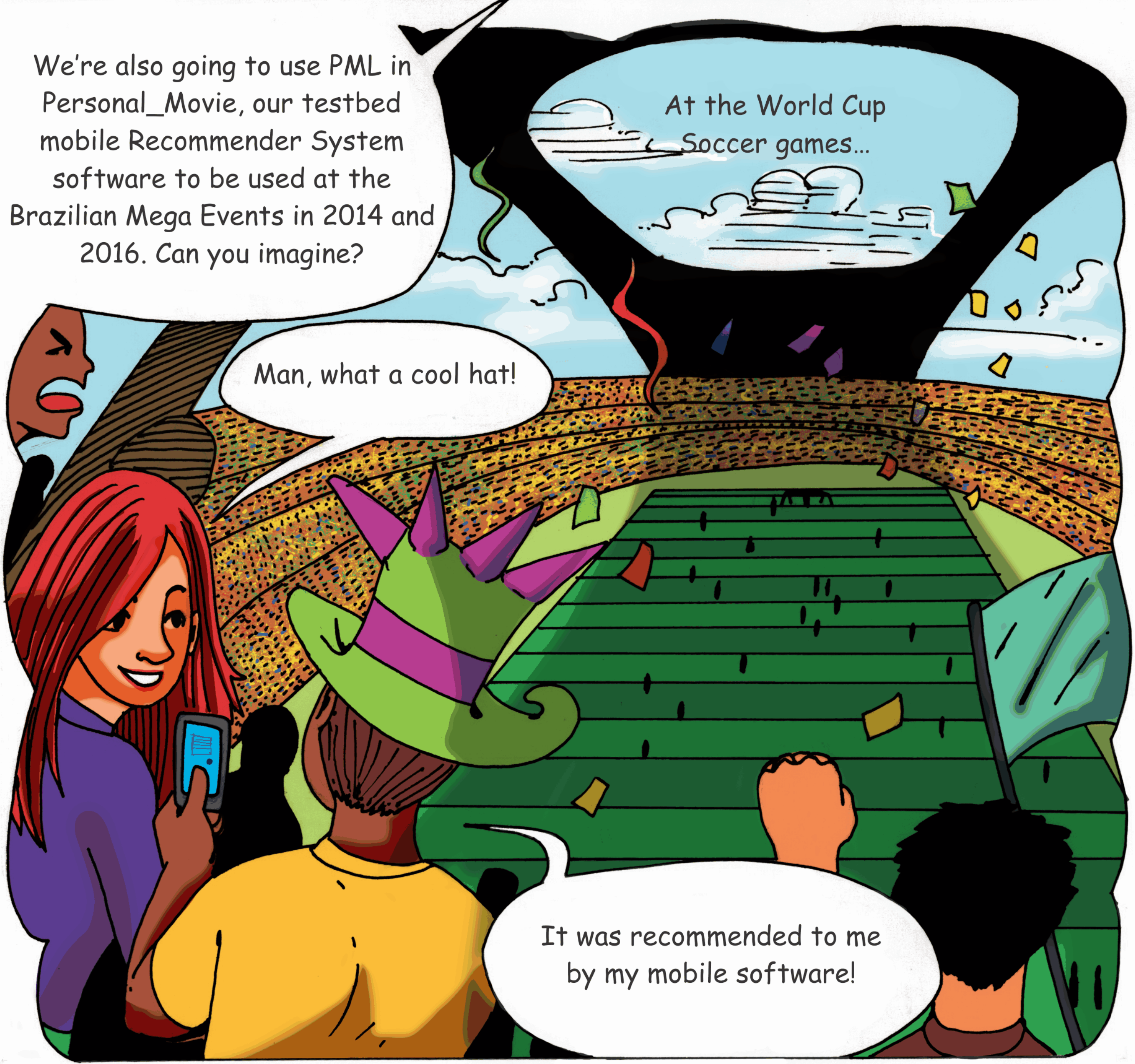

Not yet...
Personality-Inventory
Come look... Here we have two of the most famous, Sam Gosling's TIPI and John Johnson's NEO-IPIP. Both are based on the Big Five Model.
Isn't it enough to have so many similar models? And still, is there more than one test for each model?
Jojo, they're similar but different. TIPI has 10 questions while NEO-IPIP has 300...
300?! Wow, 300 questions?
Calm down, I'll explain... TIPI has 10 questions, but it can measure only the 5 factors of the Big Five, while NEO-IPIP can measure the 5 factors and 6 more facets of each one, which means 30 traits...
OK, but if there's a questionnaire that measures all the traits, why would people use a test that can measure only 5?

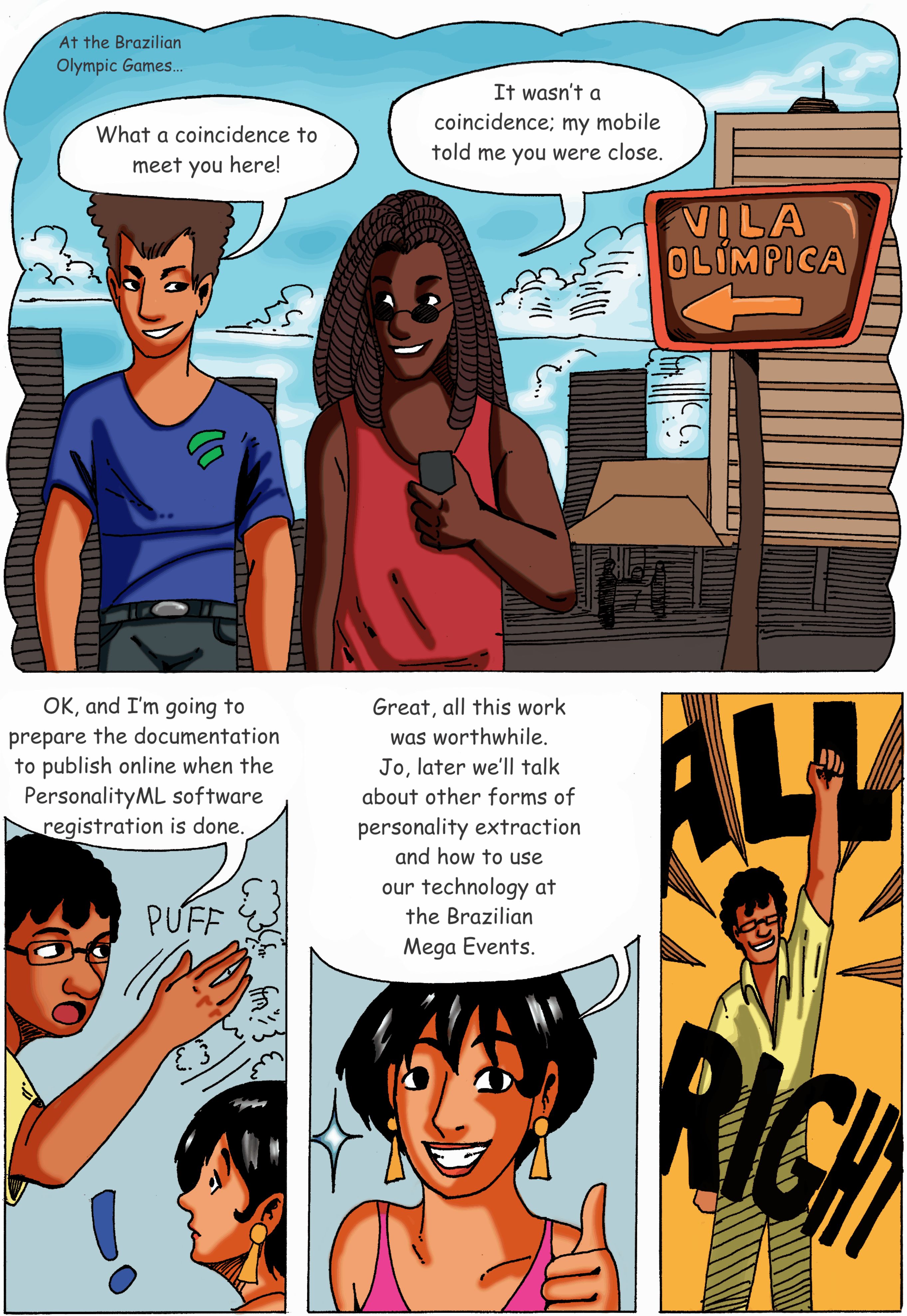

You have just shown one of the reasons why. Imagine you ask somebody to answer all those questions: it's scary and time consuming, isn't it?
300 questions... I get tired just by thinking about it.
For some kinds of applications, the information extracted by TIPI is all we need; however, if we need a more complete, precise personality, the NEO-IPIP would be better...
Are there other ways to extract personality traits instead of using questionnaires?
Actually, there are... but we'll talk about that another day. For now, we have to focus on PersonalityML.
Hmmm, that's OK... I think with all this we can build the first version of PersonalityML... PML... but where can we begin to use it?
Right here, in the Personality-Inventory. It's already able to extract personality traits by using TIPI and NEO-IPIP tests. Then, we can make this information available by exporting it under the PersonalityML format.
ALL RIGHT!

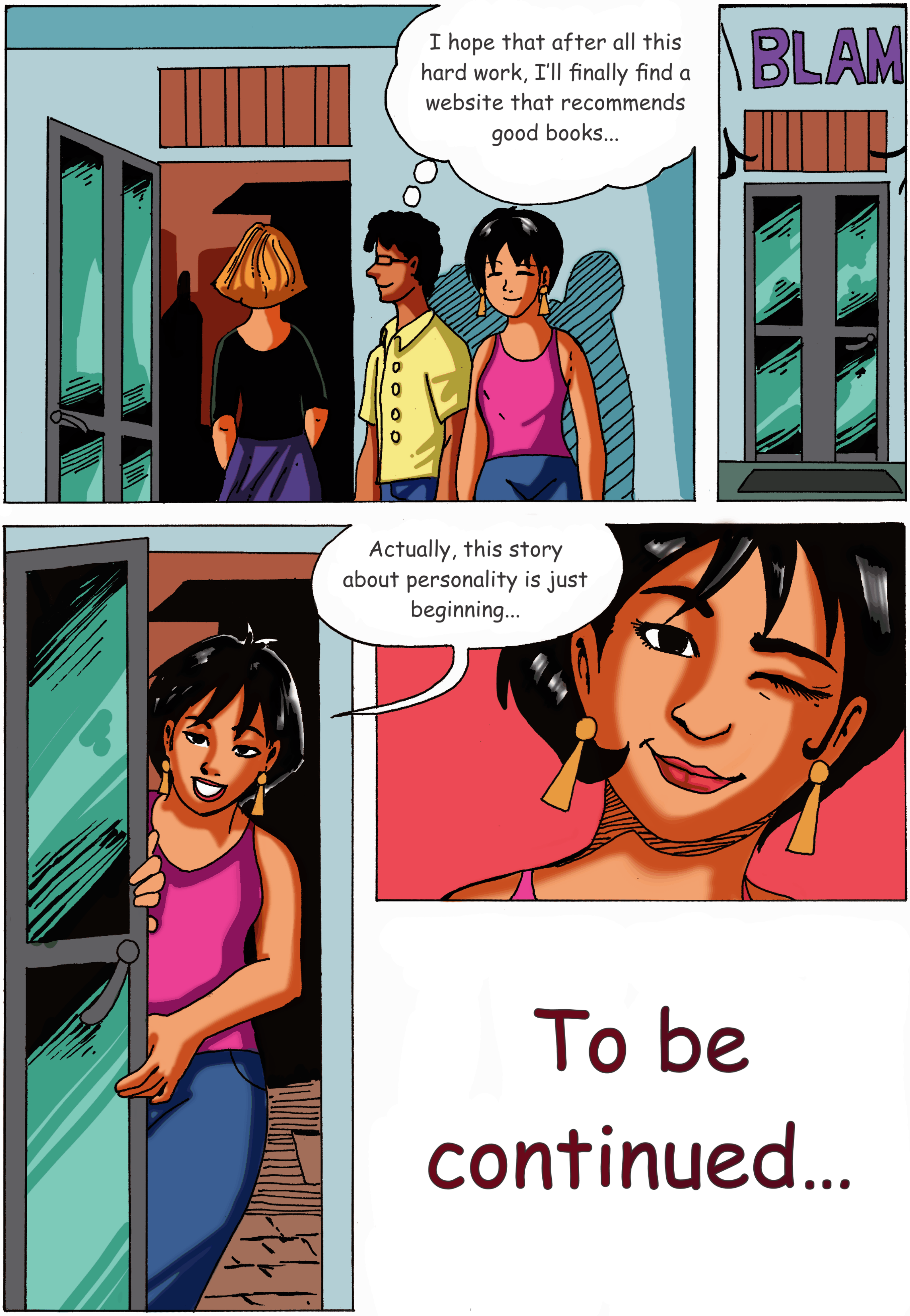

Some days later...
... It's done, this will solve the extensibility problem...
Sure! Now we have the first version of the PersonalityML schema and can start to use it...
Great, after all our hard work. Now, we must register it at the Brazilian Institute of Industrial Property and start to publicize it.
I can't believe it!! !
We got it!!! We can start to implement a new version of Personality-Inventory for mobile exporting the personality data, according to the PML format.
Now, imagine how much this will contribute to web personalization, considering that computers will be able to understand the personality clues left by users and use them to improve the computer decision-making process.


In addition, PersonalityML will enable computers to exchange personality data; the personality extracted by one tool can be used by a diversity of applications.
Wow, imagine if we had to answer 300 questions for each e-commerce website? I'd never buy on the Internet again...
?
HAHAHAHA
Hey, Jo, do you remember I told you that there are other ways to extract personality other than through questionnaires?
It's true, I almost forgot!!! When do we start...?
Take it easy, one step at a time. First, we're going to apply PersonalityML in our ongoing projects; after that, we can begin to research about implicit personality extraction...


OK...
Uh huh...
Besides the Personality-Inventory, we'll use PML in the Group Recommender[1] System to enable it to get a user's personality from other sources.


We're also going to use PML in Personal_Movie, our testbed mobile Recommender System software to be used at the Brazilian Mega Events in 2014 and 2016. Can you imagine?
At the World Cup Soccer games...
Man, what a cool hat!
It was recommended to me by my mobile software!


At the Brazilian Olympic Games...
What a coincidence to meet you here!
It wasn't a coincidence; my mobile told me you were close.
VILA OLÍMPICA
OK, and I'm going to prepare the documentation to publish online when the PersonalityML software registration is done.
PUFF
!
Great, all this work was worthwhile. Jo, later we'll talk about other forms of personality extraction and how to use our technology at the Brazilian Mega Events.
ALL RIGHT


I hope that after all this hard work, I'll finally find a website that recommends good books...
BLAM
Actually, this story about personality is just beginning...
To be continued...

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She was born in 1974. Since finishing her undergraduate studies, in 1996 at Universidade de Passo Fundo-RS, her chosen research area have been Artificial Intelligence. In her Master degree (1998 at Universidade Federal do Rio Grande do Sul RS), her research was focused on Cognitive Agents in order to improve the motivation and interactions between humans and computers. From her PhD (2008 at Université Montpellier II LIRMM-France), she began to work with Affective Computing and how to model and represent the Human Psychological aspects in computers aiming improve the personalization and satisfaction/motivation of humans during their interacting with computers. Nowadays she is an associate professor and researcher at DCOMP/UFS. Her more recent projects include how to extract human Personality in order to motivate and personalize the services in Recommender System considering mainly the user Psychological aspects. In the last years she has been writing many books, books chapters and papers about the use of Affective Computing in order to motivate and personalize information for people. In 2011 we receive 3 awards in projects which considering aspects such as accessibility, Recommendation and Personality Traits. She won a fellowship from CNPq.

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