

The Interim PLUS + + + + + + + + + + + + + + + +

Curriculum Supplement For Schools

The Interim Plus is a periodical dedicated to educational matters and specifically designed to assist teachers in integrating relevant life issues in their lesson planning.

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The Interim Plus is published Bi-Monthly by
The Interim Publishing Company
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Date: February 2016

Edition: Volume 15 No. 4

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One semester has ended and the second half of the school year is under way. One of the first exciting pieces of news to share is the announcement of the prize winners of the Father Ted Colleton Scholarship and several well-chosen excerpts from the essays submitted. The topics of our curriculum supplement include thermodynamics and human conception and also the corrosion of parental rights in the twenty-first century.

The prize winners for the Father Ted Colleton Scholarship come from three different provinces of Canada: 1st prize of \$1500, **Hayley Csada** of Regina, Saskatchewan; 2nd prize and \$800, **Rebecca Malcolm**, Newmarket, Ontario; and 3rd prize of \$500 to **Mary Clarin** of Port Coquitlam, British Columbia. We extend our heartfelt congratulations to the three prizewinners, but also to all participants for their excellent efforts. Over 900 students have partaken in this scholarship program since its inception in 2001. The essay topic for the next edition will be announced in May of this year. Please alert senior students (those who will be in grades 11 or 12 next September).

The topic for the just completed scholarship and essay contest read as follows:

The family has been described as the "Engine of the world and of history. Everyone builds their own personality in the family, growing up with a mom and dad, brothers and sisters, breathing in the warmth of home." (Pope Francis) Write a commentary on this statement discussing several of the greatest challenges that the institution of the family faces today, what is the nature of the assault on the family and what can be done to halt the crumbling of family structures.

Here are some noteworthy excerpts from the essays submitted. The extracts are interesting in themselves and show insightful student thinking on the theme of families and the serious challenges families face today. The quotations can also serve as good backdrop to **Part A** of this supplement.

Because family was created for God, this sinful world does its best to tear it apart and build its own view of the family and life as a family. The devil works through the world to pull apart what God has deemed



as sacred. Van Dyken

If we are constantly fed poison we will become used to the taste, not seeing the harm it is truly causing us. The media is slowly poisoning us,

causing us to find happiness in the wrong ways, leaving us defeated as we are unable to get back on track to our destination. Aulicino

So we have become a generation so concerned with pleasing ourselves, that we have forgotten to please God, Browne

To amend all relationships within a family, it is important to love and listen. Bui

In 1960 the first birth control pill was let out to the public. The bill was an immediate hit, what else do people like more than doing what they want, when they want, without repercussions? This was and still is a huge assault on the family. Janzen

Some children tend to view their parents as chauffeurs, chefs, or simply as people who buy them items. But for a family to function in harmony, it is vital that children truly appreciate the sacrifices their parents make. Zografos

Oftentimes the majority of media, the abuser of truth (authoritarian) clashes against the very ideals that act as the foundation of the family. Chang Kit

For years and predominantly in today's society the pressure to engage in sex at a young age and explicitly before marriage is enormous. It is an expectation forced upon us through film, media, and our peers. Colozza

On social media sites, we collect 'followers' as friends as if they were currency and then unfriend these individuals nonchalantly as if they were dust particles occupying a shelf. Csada

"The homemaker has the ultimate career. All other careers exist for one purpose only and that is to support the ultimate career." - C.S. Lewis



out communication you cannot discuss how you feel or what your personal thoughts are. Relating to one another becomes harder, and putting in earphones or turning your back becomes the easiest out you could imagine. **Odelein**

It is said, "As the home deteriorates so does the rest of society."... Home is where communication is learned and cultivated. **Zekveld**



Starting a family by living together, in my opinion, is starting with a doubt and an attitude of complacency already implanted in the relationship, a seed of doubt that, over time, may continue to grow. **Jaya**

However, the rhythm of the family heartbeat should never be ignored, as it calls the individual back to the

unwavering love and care modelled by the family in their formative years.... Through it all, the family is the backbone of the individual, the heart of society, and the veins through which all that is good travels. **Malcolm**

Love is the glue that holds families together and Hollywood is the water that begins washing away the glue and making it less adhesive. **Ermak**

A study undertaken by Statistics Canada in 2007 found that the 'average time a family spent together on a weekday was 45 minutes'. This was a 30 minute decline from 1992 and a 45 minute decline since 1984...the study also concluded that the average time spent at work by parents went from 6.7 hours in the 1970's to 8.9 hours in 2005. **Sloan**

Divorce is a form of assault that many people turn to out of desperation. It involves severing the ties between the parents who began the family, thereby having a negative effect on the children who struggle with accepting the separation. **Xshaferi**



Three major issues that the family faces include busyness, materialism and secularism. This is caused by distractions, causing individuals to lose focus on what is important—faith and relationships within

The internet is the best and worst thing that has been introduced to us. It takes away the art of conversation, and thus, lack of communication becomes the root of the problem. With-

the family. ... This leads to parents turning to technology or any other form of stimulation to pacify their child, replacing their role as a parent. **Zonoozi**

The attack on the family is approved when society does not fight back for the bonds, which have been robbed from them, that unite its members together. It is what happens when the youngest and most vulnerable members of society are murdered, before their first breath, by those who have vowed to protect life. **Timson**

However, it [the provincial health curricula] fails to emphasize the centrality of the divine within the family structure and implies that all models of family living are ethically acceptable. **Csada**

Yet it (divorce) tears apart families daily and breaks the hearts of both parents and children. **Van Dyken**



Part A Individuals and Families in a Diverse Society, (HHS4M)

Throughout the history of the human race, from pre-recorded time to post-neolithic, the true foundation of healthy societies has always been the family. This organism is primarily built on blood relationships because a man and a woman unite, producing offspring and the family unit functions as a self-governing group or micro-state with its own rules, sense of authority, brand of economics, mode of worship, means of communications, and transmission of values and relationships with the world outside itself. The role of parents has usually been defined by tradition and later codified in law. For many reasons the tightly knit family structure functioned well for most of the previous centuries, even if the roles within the family were not necessarily equal or offering the same opportunity to all its members in terms of personal rights and development.

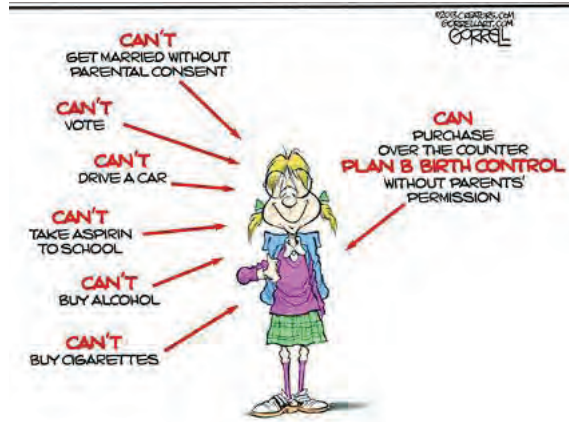
Because of industrialization and technological progress, the waging of world wars and the rise of new ideologies, much has changed in society and this is being reflected in the fate of the modern family and the changing relationships among its constituent parts.

Some aspects of the changes have been hailed as liberating (for example, the onset of clean running water, modern plumbing, washing machines, refrigerators, cooking ranges and microwaves, vacuum cleaners, etc.). These have freed women from the household chores traditionally associated

with a woman's stereotypical role in household tasks. Women's roles were ameliorated considerably. The invention of artificial birth control pills and other anti-conception devices likewise were hailed as the great equalizer, giving women the same control over their bodies as men, and hence the freedom to pursue higher education and careers and then compete with men in the labour force.

These developments have had huge impact on the family as an institution and on the relationships within the family unit. In the process of "liberation" perhaps something has been compromised, namely the solidarity and unity of the family structure itself. As changes have been entrenched by the development of law, the authority and role of parents seem to have been eclipsed. The interest and rights of individuals seemingly count for more than the well being of the family as a whole. Nowhere are some of these problems most acutely expressed than in the education of children, and especially in the area of intimate matters like sexual and health education.

The grade 12 course *Individuals and Families in a Diverse Society*, (HHS4M) is one course wherein this topic could be



Abortions without Parental Consent

In most provinces in Canada, including Ontario, the abortifacient morning after pill, or Plan B, is available "over the counter" in pharmacies. Anyone, regardless of age, can purchase it. In Saskatchewan and Quebec, the pharmacist will ask the customer some screening questions first.

While some states in the USA have laws requiring a female minor seeking an abortion to inform or obtain the consent of her parent(s) before she can undergo the procedure, teens in Canada can get an abortion without their parents' permission or knowledge. A child as young as 12 can get an abortion in Ontario without their parents ever knowing.



explored. Josie Luetke (summer intern 2015) compiled the information and developed it for this section of the supplement. She chose to title the lesson unit as: **The Corrosion of Parental Rights in the 21st Century**. She suggests that the problem is not restricted to Canada. Other nations are experiencing similar challenges especially in the area of education.

The Corrosion of Parental Rights in the 21st Century

In recent years, there has been a mounting attack on parental rights across the world. It's not always noticeable because, in some respects, it seems that parents have a lot of control over their children. Parents have the final say about whether their children can get married or not, receive certain medical treatment, get a piercing or a tattoo, etc. However, in the areas that matter the most, parents have lost out.



Questions

1. What do you think have been the three greatest factors bringing about changes in roles and relationships within families today?
2. What contradiction are these comics pointing out? Are they effective at conveying their messages? Why or why not?
3. Do you think parents have a right to know if their child is pregnant and if their child is intending on having an abortion? Why or why not?
4. How might secretly obtaining an abortion impact familial relationships? Will it compromise a parent's ability to care for their child?
5. Daniel Levinson notes that in pre-adulthood stage, youths are experiencing growing independence. Erikson theorizes that during adolescence, youths are also discovering both their sexual and occupational identities. Why might communication between parent and child still be important at this stage of development?
6. What special problems might new immigrant families face when interacting among themselves within the diverse Canadian society?
7. Explain some effective strategies for communicating and negotiating to maintain satisfying parent-child relationships; spousal relationships; student-teacher relationships; parent teacher relationships.

Resources:

<https://www.lifesitenews.com/news/12-year-olds-can-get-abortion-in-ontario-without-parental-knowledge>

Ontario Sex-Ed Curriculum

In Ontario, the introduction of the new or revised *2015 Health & Physical Education Curriculum* caused a public furor, seen by many as being pushed onto schools by Premier Wynne's Liberal government without sufficient parental consultation. Only one parent from each school was chosen to provide feedback about the new curriculum. Most of the anger and concern centered on the sexuality and health component. The feedback survey sent out also asked vague and ambiguous questions that could easily be twisted to support any agenda.

The new health and physical education curriculum was opposed by many parents because of its content, as being inappropriate for the age groups suggested in the curriculum

document. Many objected on the basis of its radical ideas and the lack of a real moral framework when it came to questions of love, marriage, chastity, self-image, etc. Others were concerned about the young age at which certain concepts were to be introduced, including gender identity theory, and the normalization of homosexual family structures. While other parents bewailed the fact that in this new curriculum no mention anywhere was made of sex as an expression of love or in the context of marriage.

Parents became easily frustrated, feeling that their kids were being taken away from them. Over 200,000 Ontario parents have signed petitions against the curriculum. A poll taken at the time when the curriculum was origi-



nally released in February, 2015 revealed that 34% were opposed to it. That number has since grown. Two months later, 40% were opposed. Multiple protests were held across the province and thousands of parents pulled their children from school from May 4 to 11th, 2015, to protest the curriculum. In the Toronto area alone 35,000 students were recorded as absent, which is over twice the number of absences the week prior. On May 4, just 130 of the 1350 students at Thorncliffe Park Public School were in attendance. Much of the opposition to the curriculum came from certain ethnic and religious groups—like the Chinese population and the Muslim community in the GTA. While the opportunity to opt out of the program does exist in theory, many parents were considering pulling their children from the province's public schools altogether.

Questions

1. Look at some of the signs at the sex-ed protests. What seems to be the general sentiment that is being communicated?
2. Conduct a survey on parents' opinions of the new sex-ed curriculum and the consultation process involved. This can be done online (with a tool such as SurveyMonkey) or on paper. Write a report to summarize your findings.
3. Do you think more parental consultation should have taken place in the development of the curriculum? Why or why not?
4. Do you think the government is respecting cultural and religious differences when implementing this curriculum? Why or why not?
5. How do you imagine you'd feel if you were a parent and you could not control what your child was learning in this sensitive area?



Resources:

https://www.campaignlifecoalition.com/index.php?p=Sex_Ed_curriculum
<http://www.torontosun.com/2014/11/18/all-parents-should-have-say-in-sex-ed-changes-pcs>
<http://www.torontosun.com/2015/05/04/ontario-parents-pull-kids-from-school-in-sex-ed-protest>
<http://www.torontosun.com/2014/11/30/exclusive-documents-show-sex-ed-consultation-lacking>
<http://www.torontosun.com/2015/04/14/wynne-trying-to-brand-pc-party-as-homophobic-rednecks>
<https://news.vice.com/article/thousands-of-canadian-students-are-ditching-class-to-protest-their-provinces-new-sex-ed-curriculum>
<https://www.lifesitenews.com/news/sex-ed-protest-in-toronto-on-june-7-hopes-to-draw-10000>
<https://www.lifesitenews.com/news/thousands-of-muslims-protest-sex-ed-in-toronto-accuse-premier-wynne-of-betr>
<http://www.theglobeandmail.com/news/toronto/coalition-of-the-pure-how-ontarios-sex-ed-protests-hit-critical-mass/article24350160/>



Case Study #1: Parent vs Hamilton-Wentworth District School Board



In 2012, Hamilton father Steve Tourloukis sued the Hamilton-Wentworth District School Board over parental rights. Tourloukis is a member of the Greek-Orthodox Church. He wants his elementary age children to hear about issues like marriage,

family, and sexuality, solely from a Christian perspective and requested that he be able to withdraw his children from classes in which those issues are brought up. After the board refused, Tourloukis once again made the request, citing the board's own Equity Policy that promised religious accommodation. He was invited to meet with the principal of his children's elementary school, Gordon Price elementary, and the board's Equity Principal. At the meeting, Tourloukis was

told that removing his children from certain lessons would constitute discrimination against their classmates. It was suggested that Tourloukis could always homeschool or enrol his children in a private school. His subsequent request that he be notified in advance when the topics of marriage, family and sexuality were discussed in his kids' classes was also denied.

Backed by the **Parental Rights in Education Defense Fund**, Tourloukis finally decided to sue the Hamilton-Wentworth District School Board. He pointed to the ability of other groups, such as Jehovah's Witnesses and Muslims, to not participate in some classroom activities. He also stated that this is primarily about "a parent's right to know what is being taught in schools." He hopes for the school board to, in his words, "acknowledge my inherent parental rights to direct the spiritual and moral education of my children." The suit is still unresolved.

Questionsn

1. Could pulling children from classes on marriage, family, and sexuality count as discrimination against other children in the class? Why or why not?
2. Should parents have the right to withdraw their children from certain classes that they claim contradict their religious values? Why or why not?
3. How might you have handled that situation had

you been a parent uncomfortable with what your child was learning in class? List the steps you would have taken.

4. From 5 to 12 years-old, children are at the stage of industry (competence) vs. inferiority according to Erikson. Their teachers and peer group become more important. How might conflicting messages between a child's parents and those they interact with at school negatively impact the child?
5. Which of Kohlberg's levels of moral development does the Hamilton-Wentworth District School seem to want the Turloukis family to reason at? What level do you think Steve Turloukis is reasoning at?
6. What might the impact of the Court's decision be? Speculate as to what it might mean for future parental rights cases if Turloukis is successful.
7. Write a letter to the editor in support of Steve Turloukis or of the Hamilton-Wentworth District School Board. Be sure to explain your position.



escorted home and a Child Protective Services (CPS) investigation into the parents was launched. One woman from CPS threatened to take the children away immediately if Alexander Meitiv didn't sign a "temporary safety plan" assuring constant supervision of his children until CPS followed up. Two months later, the parents were found responsible for "unsubstantiated" child neglect, meaning that while there was not enough credible and consistent information to form a conclusion, the CPS will still maintain a file on the family for five years.

The Meitivs were undeterred. On April 12th, 2015, they let their children once again walk to a park alone, with instructions that they return by 6 o'clock. After another concerned passerby called 911, Rafi and Dvora were picked up by the police. They were held by authorities for over five hours. Their parents frantically searched for their children until they were contacted by Montgomery County's Child Protective Services at 8 p.m.

Watch this video to find out more on the story: https://www.washingtonpost.com/local/education/parents-rally-around-free-range-family-with-petitions-protest-plans/2015/04/15/1e96963c-e381-11e4-b510-962fcfab310_story.html

All allegations of child neglect were dropped in June 2015.

Mom Danielle, who grew up in the seventies in New York, said, "The world is actually even safer than when I was a child, and I just want to give them the same freedom and independence that I had — basically an old-fashioned childhood." She went on to say, "I think it's absolutely critical for their development — to learn responsibility, to experience the world, to gain confidence and competency."

Resources:

<http://www.citynews.ca/2012/09/10/hamilton-father-wants-option-of-pulling-kids-out-of-class-based-on-religious-beliefs/>

http://www.defendingparents.com/shared/media/editor/file/Statement%20of%20Steve%20Turloukis_v6.pdf

<http://www.thespec.com/news-story/2259915-dad-s-parental-rights-case-tough-to-make-lawyers-say/>

<http://www.cbc.ca/news/canada/hamilton/news/hamilton-dad-takes-school-board-to-court-over-religion-1.1220342>

<http://toronto.ctvnews.ca/christian-father-sues-ontario-school-board-for-religious-accommodation-1.949577>

<https://www.lifesitenews.com/opinion/why-kathleen-wynnes-claim-that-parents-can-opt-out-of-sex-ed-is-an-utter-fa>

Case Study #2: "Free Range" Parenting: Irresponsible?

Danielle and Alexander Meitiv, who live in Silver Spring, Maryland, are self-described "free range" parents. Instead of hovering, they prepare their children to experience the same independence that they enjoyed when they were young. They attempt to equip their children with problem-solving skills rather than always being around to fix problems for their children.

On December 20, 2014, after receiving a 911 call, three police officers stopped the Meitiv's children, 10-year-old Rafi and 6-year-old Dvora, when they were walking over a kilometre and a half home alone from a park. The children were

Questions

1. Consider Erikson's eight stages of psychosocial development. Do you think Erikson would agree or disagree with Danielle Meitiv's justification for letting her children walk home alone? Explain.
2. Evaluate this "free range" parenting style. Compare it to helicopter parenting. Do you think either can be considered responsible parenting? At what point does the safety of the child outweigh parental rights?

Resources:

<http://www.washingtontimes.com/news/2015/jun/22/free-range-meitiv-family-cleared-of-all-child-negl/>

<http://www.dailymail.co.uk/news/article-2916878/We-just-doing-parents-did-Mother-investigated-letting-10-year-old-son-6-year-old-daughter-walk-home-defends-herself.html>

<http://www.webmd.com/parenting/features/free-range-parenting>

<http://www.freerangekids.com/>

https://www.washingtonpost.com/local/education/parents-rally-around-free-range-family-with-petitions-protest-plans/2015/04/15/1e96963c-e381-11e4-b510-962fcfab310_story.html

Case Study #3: Homeschooling Option

As a backgrounder, please note that in Canada parents have the legal right to teach their own children at home if they prefer that alternative. For a variety of reasons this particular sector of the schooling system keeps growing every year in Canada. In Ontario alone the number currently in this category is more than 20,000. There are many different reasons for this increase: personal preference, distrust of the public

systems, ideological factors, religious or ethical concerns, and personal family circumstances.

However, in some countries this option is not available to families. This is the case in Germany where homeschooling is illegal. Because of this, numerous homeschool-



The Romeikes



The Wunderlichs



The Schaums

ing families have gotten in trouble for defying the law. Thomas and Marit Schaum have been criminally charged for homeschooling their children. Petra and Dirk Wunderlich had their four children forcibly taken from them when around twenty police officers raided their home. Another

German family, the Romeikes, have sought asylum in the United States. Have your stu-

the articles listed below in the resources and then have them answer these questions.

Questions

1. Why do some parents choose to teach their children themselves?
2. How do such children perform academically in comparison to those taught in the public systems?
3. Briefly discuss some advantages and disadvantages of homeschooling.
4. In 2003, the German Federal Constitutional Court announced, "[t]he state has an equal interest in the education of children." Do you think both the state and the parents have a stake in a child's education? Who deserves the role as primary educator of the child? Why?
5. Petra Wunderlich said that it was almost impossible for any family to fight "the powerful German state" because "it is too much, too expensive." How does this case compare to the conditions of Nazi Germany, when children were forced to join Hitler's Youth?
6. How much control should parents have over their children's education?
7. How do you think the ordeal the Wunderlich children experienced will affect their development?
8. In Conversations with Jean Piaget, Piaget says: "Education, for most people, means trying to lead the child to resemble the typical adult of his society ... but for me and no one else, education means making creators... You have to make inventors, innovators—not conformists." Whose side do you think Jean Piaget would be on—the homeschooling parents' or the German government's? Which other psychologists and sociologists do you think would have something to contribute to this debate? Choose one and write an essay describing what you believe their position would be. Make sure you back up your claims with evidence from your selected person's works.
9. Ask your local MP if she or he thinks that homeschooling parents facing persecution in their native country should be able to seek asylum in Canada

Resources:

<http://ontariohomeschool.org/homeschooling-faq/>
<http://hub.youtakeoneducation.com/hub/homeschooling?w=1920;rh=http%3a%2f%2fwww%2eflora%2eorg%2fhomeschool-ca%2f;rd=1>
<http://www.christianpost.com/news/german-homeschoolers-win-custody-of-their-kids-but-court-still-calls-it-abuse-of-parental-authority-125628/#ippLeARwcYIX0SPO.99>
<http://www.hslda.org/hs/international/Germany/201505220.asp>
<http://www.wnd.com/2013/09/prosecutor-wants-jail-for-homeschooling-parents/>

For further reflection/exploration:

1. Identify and discuss present issues in your local school board that might present a challenge to parental rights.
2. Attend a school board trustee meeting. Consider delegating on a topic that interests you.
3. Talk to your parents or guardians about their perception of their role in your education. How does this role change or develop over time?
4. Examine the curriculum expectations of the *course Individuals and Families in a Diverse Society, (HHS4M)*. Why do you think that a course that focuses on “parental and care-giver role expectations,” the “responsibilities for childrearing and socialization,” and even “rights and obligations of spouses” fails to mention parental rights?
5. Research other cases in which parental rights have been compromised. Give a presentation to summarize your findings. Develop points of action to resolve the disputes.
6. Have a debate or perform a skit in which there is a conflict between the parent and the school/state. Try to come to a solution that satisfies both sides. Did both parties have valid concerns? Which party made a better case? How would you have felt if you were the teacher or parent?

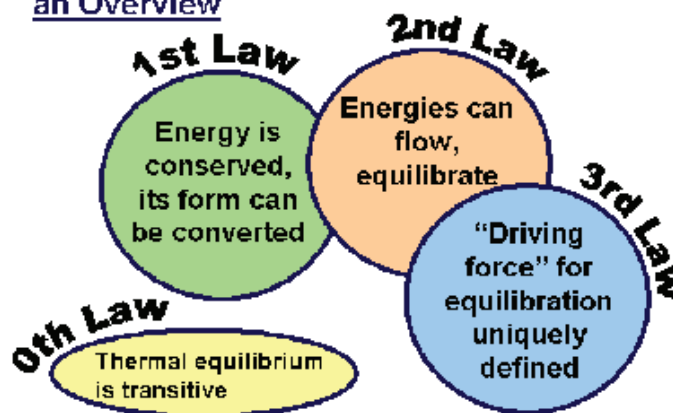
Part B

In this section Joseph Marilla, another of the 2015 summer interns, takes a look at a couple of ideas that link certain scientific principles to life issues. They are not simple ideas but Joseph has attempted to make them relevant and clearly understood.

Thermodynamics: The Big Bang, The Start of Life and Conception

Thermodynamics deals with the relations between heat and other forms of energy (such as mechanical, electrical, or chemical energy), and, by extension, of the relationships between all forms of energy. You can basically think of it as the physical study of the transfer of energy in and between various different forms in various different ways. Statistical mechanics explains the microscopic details behind thermodynamic principles.

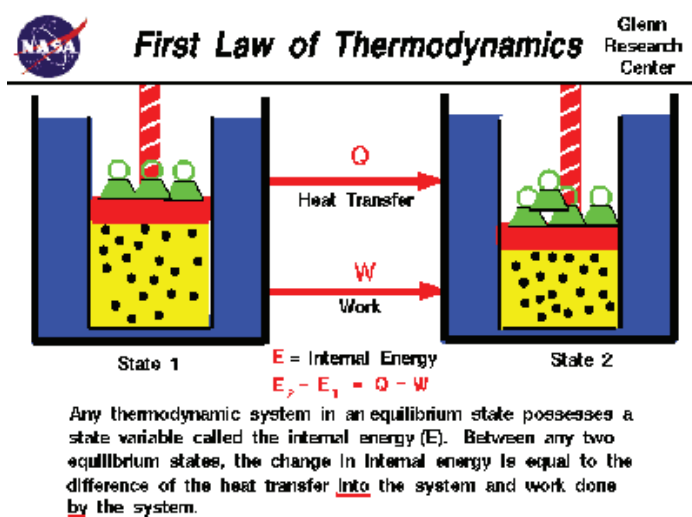
The Thermodynamics Laws, an Overview



©1998, David H. Everett, University of Toronto, Canada

Some Definitions useful for this section:

1. Temperature: is a measure of the tendency of an object to spontaneously give up energy to its surroundings.
2. Work: any other transfer of energy into or out of a system (ie by external forces) In Mechanics work is done when there is a displacement of the point of application in the direction of a force.
3. Heat: spontaneous flow of energy from one object to another
4. Entropy: the degree of disorder or randomness in the system. In Statistical mechanics entropy is defined as $S = k \ln(\Omega)$. Where Ω = multiplicity.
5. Helmholtz Free Energy: the total energy needed to create a system minus the heat obtained from the environment.
6. Gibbs Free energy: the work needed to create/destroy a system at a constant pressure and temperature.



The first law of thermodynamics upholds the law of the conservation of energy which states that the total amount of energy in the universe never changes (it can change forms but can never be created or destroyed).

1st Law: ($U = Q + W$) This states that the internal energy change of a system is equal to the work done on the system and heat added to the system.

2nd Law of thermodynamics states that the entropy or multiplicity of a system tends to increase. The entropy of a system is normally defined $S = k \ln(\omega)$. In other words multiplicity or randomness (entropy) of a system always tends to increase such that when a large system reaches equilibrium, it will be found in its most probable state (macro state). During a spontaneous reaction, the free energy of the system tends to decrease and as entropy increases energy is released.

1. The big bang: To have students obtain a good understanding of all the information known about the big bang theory have them watch this short animation <https://www.youtube.com/watch?v=wNDGgI73ihY>. What are some facts that support the big bang theory?

- i) The Universe had a beginning.
- ii) The Universe is expanding in accordance to Hubble's Law.
- iii) Cosmic Background Radiation (remnant heat/radiation shows that the universe was once very hot and compact). In 1965, Radio astronomers Arno Penzias and Robert Wilson discovered a 2.725 degree Kelvin (-454.765 degree Fahrenheit, -270.425 degree Celsius) Cosmic Microwave Background radiation (CMB) which

pervades the observable universe. iv) The abundance of the "light elements" Hydrogen and Helium found in the observable universe are thought to support the Big Bang model of origins.

2. The Start of Life: Schrodinger defines life as a quality living things obtain that enables an avoidance of decay into disorder and equilibrium. But how exactly did this quality begin, how initially did life come to be? Jeremy L. England says that he has the answer to that question. (Give facts from this article where students can draw thermodynamic connections) <http://www.englishlab.com/uploads/7/8/0/3/7803054/2013jcpsrep.pdf>

i) The chemistry of the primordial soup, random mutations, geography, catastrophic events and countless other factors have contributed to the fine details of Earth's diverse flora and fauna. **But according to England's theory, the underlying principle driving the whole process is dissipation-driven adaptation of matter.**

3. Conception: Now how does conception relate to both previous situations, just like the big bang and the start of all life, at conception there occurs an instantaneous discontinuity where life at that moment is undefined. The physical laws which currently keep our universe in a state of expansion and those same laws that millions of years ago created life also need to be upheld during embryogenesis and subsequent fetal development.



Questions

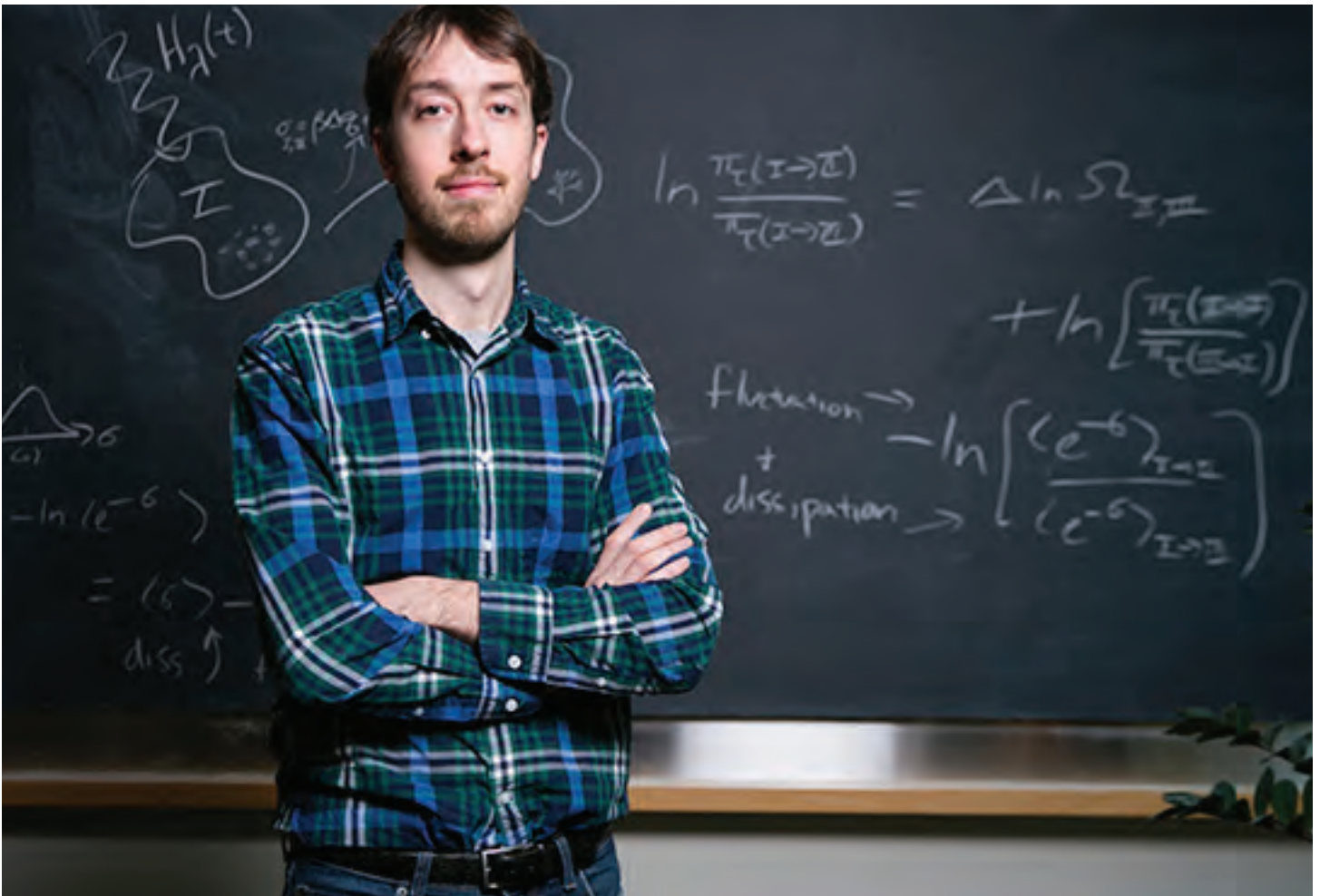
1. What is the big Bang Theory ? What are the mathematical and physical implications of this theory? Does it give the best explanation for how the universe began? Is this theory thermodynamically possible, that the beginning of the universe set in place all physical laws that are and that these will ever stay constant (these physical laws cannot change)?
2. Explain using the first and second laws of thermodynamics how England's theory might hold for life's existence. Is his theory thermodynamically sound? Explain.
3. How is the creation of a new life at conception similar to the beginnings of the universe? How life began?
4. Why, if not at all, is the creation of new life the most important? Explain the thermodynamic transfer of energy during embryogenesis from a physicist's perspective. What happens during growth?

<http://www.big-bang-theory.com/#sthash.6ToLz5Qj.dpuf>

<https://www.quantamagazine.org/20140122-a-new-physics-theory-of-life/>

http://whatislife.stanford.edu/LoCo_files/What-is-Life.pdf

http://ac.els-cdn.com/S1877056813001266/1-s2.0-S1877056813001266-main.pdf?_tid=6c571766-0fa0-11e5-b610-00000aa b0f6c&acdnat=1433961919_89d4594f9a5d4a035cbe78cfc55901de



Jeremy England, a 31-year-old physicist at MIT, thinks he has found the underlying physics driving the origin and evolution of life.